# The Builder.

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Detail Elevation, Plan, and Section of Part of the Quadrant Front.....Mr. R. Norman Shaw, R.A., Architect.
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### *Architecture at the Royal Academy.*

THE collection of architectural drawings at the Academy this year seems a good one; there is plenty of variety and a good deal of interest, and a considerable proportion of fine drawings. The most general interest will probably attach to the three drawings representing Mr. Norman Shaw's scheme for rebuilding the front of Regent's Quadrant and for remodelling what is still called, though it has ceased to be, Piccadilly Circus. The fact that such a design has been called for at all is a satisfactory indication that the Government are waking up to the fact that the street architecture of London is of some importance; as the Treasury said that they must have a scheme before they would allow the Quadrant to be touched. In spite of the tame character of Nash's cement architecture, the Quadrant, with its long sweeping lines, was really one of the best bits of street effect in London. It is bad enough that the general design of Regent-street as a whole has been cut into and all but destroyed; it was a well-intended effort to give architectural dignity and unity to an important new street, and any alterations and rebuilding in it ought also to have been made as parts of a definite scheme to be carried out by degrees. But to have cut up the Quadrant into different heights would have been still worse; a street which is laid out on a circular plan is worth nothing unless the lines are continuous; and it is fortunate that the official powers recognised this before it was too late. An Advisory Board was appointed consisting of Sir John Taylor, Sir Aston Webb, and Mr. Belcher, and they in turn invited Mr. Norman Shaw to make the design and plan now exhibited, and which, by the kindness of the architect, we are enabled to bring before our readers as the illustrations to our present number.

The intended effect of the Quadrant is well shown in the splendid perspective drawing which occupies the central position on the east wall of the Architectural Room. The cornice line is about 14 ft. 6 in. higher than the present cornice line; that it should have been raised at all is matter for regret, for the proportions of building and street are better as they are, but the commercial demand for raising street property higher has become so insistent that probably any proposal to keep the buildings to their present level would have met with determined opposition. As the street width from front to front is 84 ft., however, and the height to the top of the cornice 65 ft. 6 in., this is not at all events such an exorbitant disproportion to street width as we find in too many of the new buildings recently erected. The remainder of the height which was considered to be commercially necessary has been obtained in the roof, the ridge of which scales 97 ft. above street level, but which, being set well back, will not count to the eye as a portion of the architectural height. The front is a grand piece of masonry design, for which on the whole we can express nothing but admiration, and a satisfaction that the Quadrant should be rebuilt in so monumental a manner; and as Mr. Shaw has made out all the full-size details with his own hand, there is a certainty that the design will be properly worked out in execution. The ground story with its massive rusticated arches will have a grand effect, and the design makes a most impressive whole, though of course, as the section shows, the great depth of recess on the upper stories must be obtained by building on girders set back on the cross walls; however, the girder is everywhere now, and we suppose it is an affectation to ignore the possibilities it offers. We are not quite sure whether we should not have preferred the columns without the rustication on their lower portion; it has a very powerful effect, no doubt, and is duly ranged with and linked up to the intervening portions of the design—indeed, the careful manner in which the relation of the various details of the design to each other has been considered is one of the finest qualities in the scheme; but it seems just a question whether this very bold column rustication is not a little too weighty for its position, though we should not like to come to any conclusive opinion on the point without seeing the design drawn out without them. The treatment of the chimneys as great blocks at wide and regular spacing is a fine point; and whatever difference of opinion there may be on

some details, the design as a whole is one which we think can only arouse a general feeling, not only of satisfaction, but of enthusiasm: its complete carrying out, which must be a matter of time, will be a great and important addition to London street architecture.

On the proposal for the treatment of what had now better be called Piccadilly-place rather than Piccadilly-circus we have no criticism to make except that it seems, as one may say, too good to be true; too thorough a reforming to have the best chance of being carried out. The circus form attempted to be given to this open space had long ceased to exist except in name; and in fact, a small circus with several streets cutting into it, however the ends of the building blocks may be conscientiously fitted to the curve, can never affect the eye as a circular design; the lines are too much interrupted. Mr. Shaw's plan explains itself fully, except that we may mention that it is proposed to retain the design of the front of the County Fire Office, a very good and dignified front of its type, but to set it back to the general line of front and rebuild it in stone. The effect of the open arcade in the ground story will be retained architecturally, but (as shown on the plan) it will enclose the entrance steps instead of the street pavement; so far we regret this, for the arcading of the street pavement (as done in the Ritz hotel) is always in itself a pleasant and picturesque incident in a street; but the gain in effect to the *place* by widening the street opening counterbalances this. There is a proposal, it will be seen, to mask the commonplace architecture of the London Pavilion, towards the *place*, by a loggia (intended to have a building over it); if the whole building could be removed it would be architecturally so much the better. The two wide openings westward, approximately of the same width, into Piccadilly and the Quadrant, will give a fine, spacious, and symmetrical effect; and there is no doubt that the scheme, if carried out, will rank as a London improvement of the first order.

Sir Aston Webb's "Proposed New Buildings, Merrion-street, Dublin, for the Royal College of Science and Government Offices" is shown by three drawings in one frame (1468). The main building forms four sides of a quadrangle, and is in a dignified classic style, with a central feature formed by an order of four Ionic columns which can hardly be called a portico, though as shown on the detail perspective they have a bolder projection than would be gathered from the general drawing, where the centre feature looks a little too flat. The wings are very simply treated, the centre being slightly emphasised by pilasters and a broken pediment; the cornice is carried round the whole three sides, but the frieze and entablature only maintained at the central features. The pediment over the main entrance is seated not on the main entablature, but rises from a very bold though simply treated attic over it, a departure from the more usual tradition of making the attic the background to the pediment; but the effect is quite satisfactory. There is a cupola over the entrance, with a slight flat projection on each face of the plan, carrying a clock-face, and a seated figure of Britannia at the apex; viewed from a distance, the perspective makes the dome look a good deal distorted; it looks all right from a position near the foot of the drawing; but it illustrates the wisdom (as we have always thought) of always choosing a long point of sight for a dome drawing, whether exterior or interior; as for the latter of course it may be said that you can then show very little of the dome, but the fact is that the interior view of a dome in perspective is an impossibility except on a conventional system of viewing one-half of it from a distance with the intervening architecture removed. This, however, is a digression on drawing; before quitting the design referred to we may notice the pleasant effect of the planning of the re-entering angles of the quadrangle with a square projection crowned by a little open cupola on colonettes. On the plan the corridors are continuous but for the Chemical Laboratory, which occupies the whole width of the building; they are partly next the quadrangle and partly in the centre between two sets of rooms; in that case we conclude that they are one-story and lighted from the top; they must be rather dark otherwise. Sir Aston also exhibits "Detail elevation of the New Admiralty building at the East end of the Mall" (1470); the whole building was illustrated in our issue of April 29, 1905. This drawing shows one bay of the order in the concave portion of the front, and the treatment of what may be called the blunt ends of the plan adjoining the circular portions. This is powerfully treated with a couple of heavy rusticated pilasters with a pediment over; between them at the upper portion is some rich decorative carving of shields and other attributes, and below this a niche with a seated allegorical figure holding a sword; the inscription "Nelson" on the podium looks a little too much as if the figure above were intended as a portrait statue of Nelson. The curved face is decorated with a freely treated Ionic pilaster order and windows between; the crown moulding over the middle window just cutting out beyond the face of the pilaster and returned on it; a pretty little point in detail.

Coming to the exhibits of another member of the Academy, Mr. Belcher, the chief one takes the form of a large model, showing "New Structure in Williamson Park, Lancaster" (1613). This is apparently a stone pavilion on a large scale, erected, like a triumphal arch, purely for architectural effect; a kind of chance an architect does not often get in these utilitarian days. It shows a classic pavilion with a ground story with concave lines on plan carrying a lofty pavilion and dome above on convex (circular) lines; the spaces at the angles over the lower pavilion are filled up by smaller erections with cupolas. Without knowing more precisely what is the idea or the object at the root of the architectural conception it is difficult to judge of it; the whole effect is picturesque and striking, though one has a feeling that, with a free hand on such a work, a little more might have been made of it. The finest point in the design is the treatment of the great flights of steps which lead up to the building; the two lower flights sweeping round in a fine curve to join the centre flight above, and leaving between them a façade of heavy rusticated classic detail with a columned recess in the centre, in which is seen a figure with a globe on his back symbolical of something, but we know not what. When we publish the design perhaps we shall be able to give more information as to its intent than is furnished in the catalogue. Mr. Belcher also exhibits, high up in an angle of the room a "Model of upper part of Angle, rebuilding of Winchester House" (1543); it is chiefly of interest as showing the grouping of sculpture, but the substructure being cut short in the model, it is difficult to judge of its relation to the architecture. In No. 1553 Mr. Belcher shows one of those fine geometrical elevation drawings with the projections profiled on, of which he has pretty nearly set the example in the architectural room, an example which we wish were more followed. This is a front marked by a very powerful rustication in the ground story; the upper part of the elevation is decorated with terminal pilasters developing into Telamon figures, and classic metal tripods are introduced above the cornice; these have no meaning, perhaps, on a modern building, but there is a pleasant antique association about them. Mr. Belcher's "New Premises, Oxford-street" (1563) suffers from the demands of the shop-front fiend (as in respect of architecture we may call him); the architect has made a heroic effort to provide a solid architectural base for his superstructure; but alas! these thin tall columns are as inadequate to the eye, as they would be in fact, without other assistance than visibly appears. The treatment above is very pleasing; plain square piers first, and over them coupled columns, the windows being played with between the piers. It strikes one that the solid arcading above the columned story looks a little too heavy for its position, but in the main the upper part of this front is very pleasing work, and the balustrade grilles above the ground story are rich and effective in design.

Mr. Jackson exhibits three small drawings, one of which, "Enlargement of Billinge Church, Lancashire" (1604), is a slightly executed pen-drawing showing an interesting scheme for the addition of an octagon choir in Gothic style to an apparently very commonplace Jacobean nave; perhaps the plan of Giggleswick chapel left its tradition on the preferences of the architect. Liturgists, we believe, consider it an unorthodox plan; architecturally we think it an interesting idea, if only the exterior covering might have been made a little more gracious to the sight. Of the view of the interior of Giggleswick chapel we can only say that we do not understand the author's architectural position, nor why he chose to render the interior of his fine sober monumental-looking chapel such a curious mingling of suggestions borrowed from various styles and epochs. We should certainly have preferred to see the simplicity and unity of *motif* of the exterior more

represented in the interior. The organ-case looks as if it should be an effective piece of work.

Mr. Reginald Blomfield's "Part elevation of New Club House for the United University Club, Suffolk Street" (1435), though exceedingly simple, is a scholarly and pleasing piece of work of the classic tradition. It is shown in a large severely treated elevation drawing; the projecting wing on the left is treated solidly in rusticated masonry with pilasters, the recessed portion with an Ionic order running through the first and second floors, and an exceedingly well-designed decorative grille to the balconies. Except this latter detail, there is nothing new or orginal; but it is a satisfactory piece of dignified masonic street architecture with a style and treatment suggestive of a Club.

Mr. Bodley exhibits an elevation of his "First design for the monument to the late Marquess of Salisbury in Westminster Abbey" (1512), an altar tomb with a recumbent figure.

We have confined ourselves on this occasion, owing to considerations of space, to noticing the exhibits of architects who are members of the Royal Academy, to whom the first place is naturally due: other exhibits, some of them important, must be left to future articles.

## BUILDERS AND THE WORKMEN'S COMPENSATION BILL.

IT may be of interest shortly to consider what will be the position of builders under the Workmen's Compensation Bill if it becomes law. The Bill has one good effect, it simplifies the law; the old questions as to the height of a building, "what is a scaffolding?" and whether a mortar-mill is a factory, will all be set at rest. But it must be remembered that the difficulties which have been experienced under the Workmen's Compensation Act have largely arisen from the desire of the Legislature at the time that Act was passed to exempt the small class builder from liabilities which it was felt he was ill able to bear. Under the new Bill this object has been sought to be attained by a general exemption of employers employing less than five workmen, but this exemption will in no case apply to builders, and the new Bill will embrace all classes of builders. This is in accordance with the recommendations of the Departmental Committee, but it will bear heavily on an industry which the labour returns show to be suffering from greater and more continuous depression than any other in the Kingdom. The clause exempting employers of less than five workmen is Clause 1 (2) (d); it is as follows:—

"This Act shall not apply in any case where the employer proves that the number of workmen employed by him at the time of the accident did not exceed five, unless the accident was attributable to the use by the employer of machinery driven by steam, water, or other mechanical power, or unless the workman at the time of the accident was employed in the care or management of horses or in mining, quarrying, or building operations, or in laying or repairing any electric line or work."

By Clause 13 "building operations" includes "the construction, alteration, repair, decoration or demolition of a building, and the work of preparing for and laying the foundation of an intended building." This definition seems to include every possible operation upon a building, but even should this not be the case definitions so framed are never held to be exhaustive definitions, but merely declaratory, as was held in Smith *v.* Coles, a case under the Workmen's Compensation Act, 1900, relating to agriculture; and there can be little doubt that all building operations whatever are included—plumbing, for instance. This being so, it is to be observed that the builder not only does not benefit by the exemption in favour of employers of less than five workmen, but he is in a worse position than these employers, since they, if machinery is being used, can still claim the exemption if they can show that the accident was not attributable to the use of the machinery; but the builder has no such defence, and the mere fact of his employing workmen on building operations renders him liable.

In one other respect does this Bill bear more heavily on builders than it does on other employers. By Clause 9 it causes certain industrial diseases to be the subject of compensation as though they were accidents, and these diseases are those to which the workmen employed in building operations are peculiarly liable. These diseases are set out in the Third Schedule to the Bill—Anthrax, lead poisoning, mercury poisoning, phosphorus poisoning, arsenic poisoning, ankylostomiasis. Opposite to these diseases in the Schedule appears a description of certain processes which may give rise to them, and if the workman, at or immediately before his disablement, or suspension under rules made under the Factory Act, was employed in any of these processes the disease set opposite to it in the Schedule shall, unless the employer proves the contrary, be deemed to have been due to the nature of that employment. Otherwise apparently the onus of proof lies on the workman. The inclusion of these diseases within the Bill was not recommended by the Departmental Committee, and has introduced some complication in the Bill; the disease may be a gradual process, and although the last employer is made liable to pay the compensation, he can call upon other employers for contribution or indemnity. The above are the only provisions in the Bill which will especially affect builders as distinguished from other employers, but the general burden of compensation will be increased by the substitution of the period of one week for the fortnight at present in force for the period of incapacity before which compensation is not to be payable, in the case of accident as well as disease. The figures proved before the Departmental Committee showed how enormously this would increase the claims.

The extension of the Bill has naturally enabled it to be framed in simpler terms, but there is still room for improvement in this respect, and there is little doubt that some of its provisions will yet afford work for the lawyers.

## THE TRADE DISPUTES BILL.

THE Second Reading of the Trade Disputes Bill last week has in no way elucidated the question as to what the Government intend should be the law as regards the liability of trade unions; this question, according to the statement of the Solicitor-General, is apparently now to be left to the opinion of the House. We venture to think that the course the Government has adopted towards this matter of principle is almost unprecedented, especially having regard to their unusually strong position. That this question is a matter of principle, and not the mere matter of detail which the Solicitor-General endeavoured to make out, can be proved from the speech of the Attorney-General, who, as representing the Government, introduced the Government measure, and with reference to the policy now introduced by the Labour Party Bill, and accepted as an immaterial amendment by the Government, used these words:—"The alternative method is the royal road. The argument one bears is, why trouble to very carefully define liability? Why trouble to reconcile the law of agency with the administration of bodies of this kind? Why not say no action whatever shall be brought? But just let me ask the House to face that proposition. The proposition, I understand, is that, however great and ruinous the loss that may be suffered by an individual, however unjustifiable the conduct of the union which may occasion that loss, even in the case of that conduct having been carried out by means of the use of the funds which are controlled by the union, yet those funds, the property of the union, are not to be made liable to redress the claim consequent on that loss." He then pointed out that if such immunity were granted to trade unions other bodies would speedily claim similar exemption, and he cautioned the House against creating injustice to individuals in seeking to do justice to the unions, and he pointed out that it was a proposal to create class privileges, an inconsistent policy for a democratic government to adopt. He concluded, "Do not let us create a privilege for the proletariate and give a sort of benefit of clergy to trade-unions analogous to the benefit of clergy which was formerly enjoyed and which created an immunity as against certain sections of the community."

In the face of these unexceptionable expressions of opinion on the part of the Government the Solicitor-General (in the absence, through illness, of the Prime Minister and the Attorney-General) had an uphill task in reconciling the subsequent action of the Government towards that clause in Mr. Hudson's Bill which grants an immunity to the trade unions which is hardly enjoyed by even the Crown. He stated that it was the intention of the Government from the first to invite the opinion of the House on the clause of this Bill which relates to the liability of trade unions, but in face of the above statements he could hardly assert that it was their intention to act as they have done towards a Bill introduced as an alternative to their Bill, and which proposes to carry out what the Government

had urged the House it was not advisable should be done. Such is the position, however, of the Government.

We desire to notice one new argument brought forward by the Solicitor-General. He asserted that as the trade unions did not enjoy all the privileges of corporate bodies, that as they were bodies which could not sue their own members, it would be unfair to make their funds liable without giving them the privilege of enforcing their contracts against their own members; and he drew a fancy picture, if incorporation were granted, of the Unions calling in the police, and even the military, to enforce injunctions obtained against their own members. Injunctions have not, as a rule, been enforced by the military, and if the trade-unions took the course suggested by the law officer to enforce their contracts we imagine they would very soon cease to exist; for, after all, trade-unions only consist of a number of private individuals, and were their methods to be applied to their own members their existence would very soon be in jeopardy. It is also to be observed that many classes of persons in the State are under certain disability, but they, nevertheless, do not enjoy immunity from liability for these tortious acts. All the same, if incorporation and the right to sue is to be the complement to the right to be sued, we think it would be far preferable to grant the unions these rights, and as a consequence to make their funds liable. That, however, is unfortunately not the position the unions contend for, but is merely a herring trailed across the scent to divert attention from the extraordinary conduct of the Government towards one of the most serious questions of the day.

## NOTES.

**Rural Housing.** A SECOND reading was given last week by the House of Commons to a Bill brought in by Mr. Mackarness, a private member, to facilitate the building of cottages in rural districts. The debate was remarkable for the general agreement on both sides of the House to the need for these cottages. But both Mr. Long and Mr. Burns agreed that legislation was useless unless local authorities would put the law in force and make use of their powers. It is no use to enact that a district council may borrow money and build cottages, when private owners do not provide enough, if such council will not move a hand. It is obvious, therefore, that there should be some power by which, if a public authority, which is primarily responsible, will not move, the Local Government Board should have the power to carry out the work of such body. As Mr. Burns truly said it is far better to keep men on the land than to try to send them back to it. The first essential to make rural life acceptable to manual workers is that there should be a proper supply of good and wholesome dwellings.

**Recent Wages in San Francisco.** THE scale of wages recently paid in the building trades in San Francisco would seem almost incredible in this country; but it seems to have arisen from an abnormal position in local politics. Owing to an unexpected *coup d'état* in 1901 the United Labour Party of San Francisco were able to elect a Mayor, Mr. E. E. Schmitz, who has held the mayoralty ever since. Under his rule, combined with the recent unprecedented prosperity of the Western port, her isolation from the centres where labour offers its services cheaply, and the "trust" methods fostered by the various Guilds of Labour, a scale of wages arose which is unheard of elsewhere. Thus, the minimum to unionised unskilled labour was 8s. 6d. per day; to carpenters, 16s. 6d.; bricklayers and their assistants, 24s. 6d., and a sovereign respectively; plasterers and lathers, 26s.6d.; plumbers, 24s. 6d.; and it is asserted, nevertheless, that these rates of pay have been justified by the employers' balance-sheets, without perceptible hardship upon them. Large fees for initiation were collected before outside labour might join the various unions. Each union was bound to the others for mutual protection, and great building enterprises were pushed forward by the capitalists with amazing assurance and courage. Having the whole municipal government dependent upon their votes for re-election, it is difficult to say where the increase in wage to artisans and unskilled labourers might have ended. What may be the influence upon it of the recent catastrophe remains to be seen.

**Generating-Stations in London.** IN view of the large number of Bills introduced into Parliament for the generation of electrical energy in London, the Commissioners of Works have felt it their duty to inquire into the possible injury of trees, plants, and flowers in the public parks, and of the national treasures in museums and picture-galleries, by the products of combustion emitted from the chimneys of generating-stations. They have come to the decision that the attention of Parliament should be called to the point so that it may be fully taken into account when electricity supply Bills come up for consideration. The objection to huge factory chimneys is not based entirely upon the nuisance caused by the emission of black smoke, for other products of combustion, such as sulphurous and sulphuric acids, and small particles of mineral ash, are particularly injurious to vegetation and buildings, as well as to pictures, marbles, and other works of art. Moreover, the oily steam which is frequently ejected from generating-stations is an unpleasant and deleterious mixture. While agreeing with the views of the Commissioners that effectual means should be taken to enforce the adoption of the most approved apparatus for the consumption of smoke in generating-stations, we are strongly of opinion that no more of these huge factories should be built within the metropolitan area. It is a perfectly easy thing to generate electricity at a distance from the place of consumption: The cost of establishing generating-stations could be largely reduced by building them in places where land and labour are cheap, and the transmission of current for a given distance would certainly be less costly than the transport of fuel to London. If we are ever to get the benefits promised by the advocates of electric light and power, the necessary current must be provided without the accompaniment of smoke and other deleterious products—a condition that cannot possibly be fulfilled so long as the present irrational system of generation is permitted.

**The Education of Engineers.** AT a meeting of the Institution of Mechanical Engineers, held in April, 1903, it was proposed by Mr. Dugald Drummond—during the discussion of a paper by Professor Dalby on "The Education of Engineers in America, Germany, and Switzerland"—that the then incoming President of the Institution of Civil Engineers should be invited to form a committee, including representatives of kindred institutions and technical colleges, to discuss the question of the education of engineers in all its bearings. In November, 1903, the committee was appointed under the chairmanship of Sir William White, and, after deliberation extending over two years and a half, has issued a report based upon the opinions expressed by nearly some 270 experienced engineers. It says much for the practicability of the recommendations in the report that they should rest upon so secure a foundation, and we hope that efforts will now be made with the object of giving them practical effect. Speaking in general terms, the committee consider that engineering training must include several years of practical work as well as a proper academic training. To obtain the latter is not difficult in these days of technical schools and colleges, but the former can only be secured by such sympathetic assistance on the part of employers as is readily given in Germany, the United States, and other countries. Assistance of the same kind is available in Great Britain but not to the extent that could be desired, and as Sir William White observed at the annual dinner of the Institution of Mechanical Engineers last week, engineers must all pull together with a view to obtaining some definite results from the recommendations of the committee.

**The City Central Markets.** ALTHOUGH the Charing Cross failure was the result of a purely accidental flaw, impossible of detection by the most rigid examination, the City Corporation, like a good many other public bodies and railway companies, have been influenced by that occurrence to take steps for the purpose of satisfying themselves as to the safety of the iron and steel roofs under their care. The most important structures of the kind owned by the Corporation are those covering the Central Markets at Smithfield, a block of buildings erected at a cost of about 2,000,000*l*., and so largely used by the public that any failure would result in an appalling catastrophe. Therefore the Corporation have acted most wisely in deciding to have the whole of the iron and steel work in the structures and sub-structures of these buildings thoroughly examined by Mr. A. T. Walmisley, M.Inst.C.E., of Westminster. It would probably be difficult to find an engineer more competent

for the performance of this onerous task than Mr. Walmisley, whose qualifications are sufficiently indicated by the iron and steel work of Olympia, the new roofing of the Borough Markets, and the roofs of the Carlisle Corporation Markets. Among the sub-structures to be examined are those in the railway tunnels beneath the Central Markets, the object being to ascertain whether the railway companies are properly discharging their obligations to the Corporation. It is to be hoped that similar investigations will be made with regard to the iron and steel structures of all the market and other public buildings both within and without the jurisdiction of the City authorities.

Steel Rolling Stock.

SINCE the year 1844 railway engineers have been progressing gradually in the direction of substituting iron and steel for timber in the construction of goods waggons and passenger carriages. There has been no undue haste in this matter, as the large amount of timber used in modern vehicles abundantly shows, and it may be hoped that the paper read by Mr. H. G. Sheffield before the Tramways and Light Railways Association may help forward the present active movement in favour of all-steel trucks and cars. So far as concerns the former class it may be noted that tentative efforts were made as far back as 1850 to 1854 by the Great Western Railway and the London and North-Western Railway to introduce iron goods waggons, but the conservatism, which is as predominant in railway offices as in Government departments, seems to have prevented the general acceptance of the innovation, and no decided preference for metal was shown until steel waggons were introduced at a comparatively recent date in the guise of an American novelty. As for passenger carriages, although the Great Northern Railway built a few vehicles with steel bodies nearly a quarter of a century ago, the introduction of all-steel cars is really due to the extension of electrically-operated railways. As modern steel-built goods waggons have had the effect of converting much of the dead load into paying load, so may the increased strength and reduced weight of all-steel passenger cars, as compared with existing steel and timber vehicles, be utilised to the pecuniary benefit of railway companies. But the public have a right to demand the abolition of timber as a material of construction, for by its continued use the horrors of railway accidents are quite needlessly aggravated.

A Minor Budget Proposal.

IT is always pleasing to note any reform in the direction of improved postal facilities, and a passing remark may be made on the Chancellor of the Exchequer's statement on this head. His proposal to devote 135,000*l.* of his surplus to this purpose will enable the Postmaster-General to make some very useful reductions in the Parcel Post rates—commencing with 5 lb. parcels, which will be carried for 6d. instead of 7d., while parcels weighing from 7 lb. to 11 lb. will be charged at the rate of 1d. per pound. It may be taken for granted that where this figure underbids the railway companies, the latter will promptly follow the lead of the Post-Office. The reduction will, doubtless, prove very acceptable to the public generally, and to some industries in particular—as well as to the agricultural interest, on whose behalf the concession is primarily made. A reduction in the cost of postal orders and an enlargement of the definition of documents transmissible by post at ½d. will also be very generally appreciated. It has long been acknowledged that the rules regulating the ½d. post have been confusing and anomalous, and the benefit of that rate is to be extended to all purely formal communications.

Arc Lamps.

THE paper by Mr. Andrews on "Long Flame Arc Lamps," read to the Institution of Electrical Engineers last week, is a valuable contribution to the very scanty literature of the subject. The lamp which forms the main subject of the paper is the "Carbone Arc," which is now extensively used in Berlin. By increasing the electric pressure between the carbons, by inclining them to one another at a small angle, and particularly by a most ingenious device for always keeping the arc between the ends of the carbons, M. Carbone has succeeded in appreciably increasing the efficiency of the conversion of electrical energy into light. Considerable importance was attached by the lecturer to the whiteness of the light emitted by the Carbone Arc, but we are inclined to agree with a suggestion made by Mr. Trotter in the discussion that this whiteness may be only apparent. The light coming from the lamps shown at the meeting certainly appeared to be white, but if they were placed in bright sunlight it would probably be noticed that the light they emit is really coloured. Mr. Andrews showed a striking experiment to illustrate the different colours assumed by ribbons, etc., when placed under different types of lamp. This experiment proved that indoor lighting by means of flame arcs between chemically-prepared colours would be impossible in practice, as their light is very deficient in blue and red rays. We think that the lecturer laid too much stress on the poisonous nature of the fumes emitted by these lamps and on the excessive ash. Their efficiency is exceedingly high and they can be used in low frequency circuits where ordinary lamps would flicker most unpleasantly. It was suggested that large halls can be economically lighted by arc lamps having the lower parts of their globes of clear glass and placed 30 ft. or 40 ft. above the floor. The lecture theatre was shown illuminated in this fashion, but we thought the variations of the luminous intensity too large to be admissible. The author's theory is that the lamp may send unobscured rays vertically downwards, as they do not then come within the usual visual range, and so the dazzling effect is negligible and we get the increased illumination.

The Abuses of Public Advertisement.

THE National Society for Checking the Abuses of Public Advertising, whose similar Bill was read a third time in the House of Lords last session, have reintroduced a measure in Parliament for empowering local authorities to control all hoardings above 12 ft. in height; to prevent the display of any advertising notice that might affect injuriously the amenities of any public park or pleasure promenade, or disfigure the natural beauties of a landscape; and to prevent the affixing of advertisements upon private property without the owner's consent.

Plowden Buildings, Middle Temple.

WE notice that it has been found necessary to shore up the east wall of the block, Nos. 3-6, Plowden-buildings, in Middle Temple-lane, and it is expected that a reconstruction of the wall must be speedily taken in hand. Nos. 3-6 constitute the remaining portion of the original buildings; Nos. 1-2 were rebuilt by James Savage, who died in 1852. The two blocks are named after Edmund Plowden, the eminent jurist and author of the "Commentaries or Reports," and treasurer of the Society. Plowden was buried in the Temple Church (1584), where is a monument, with recumbent effigy upon an altar tomb, to his memory. Plowden was a student and reader of the Middle Temple; his bust and coat-arms are in the Hall, which was built in 1562-72, and, as Dugdale records, "Mr. Edmund Plowden being constituted treasurer for that work."

Lectures on Greek Dress.

AT his second lecture on Greek Dress at the Royal Institution, on Tuesday afternoon, Professor Baldwin Brown commenced by remarking that Greek dress was specially Hellenic in a sense not previously mentioned—that it was a kind of representation of the history of the Greek spirit in art, the object of which was to give artistic form to that which was at first formless. The treatment of the dress in sculpture was gradually perfected, first in one portion and then in another. The hair, which was difficult to treat in sculpture, remained conventional in treatment the latest. It was only in the period of perfected Greek art in the time of Pheidias that the whole drapery was, so to speak, vitalised. Examples were shown of archaic figures in which the idea of the folds of the drapery was only conveyed in a formal and conventional manner. In the perfected art it fell into natural folds which assisted in giving expression to the figure, or to its action; sometimes to assist the appearance of rapid motion, as in some of the hurrying figures in the Parthenon tympana; in one of the figures of the Niobe group; in the Niké of Samothrace, descending through the air with the raiment flying behind her; or, in the more reposeful figures of the Panathenaic frieze, its lines assisted in the expression of repose and dignity. The more intricately folded parts of the linen tunic were contrasted with the broader and heavier folds of the *himation*, and both contrasted with the smooth contours of the limbs where exposed. The gradually increasing use of drapery to assist composition was illustrated in a series of the metopes, in which drapery was obviously used to fill up what would otherwise have been awkward spaces between the figures. The Ionic *chiton* was shown not to be a sewn garment; all its effects

could be got by a long and rather narrow single piece folded so as to droop in long hanging folds at one or both sides, and fastened at intervals on the arms; the process being illustrated by photographs from the living model. It was obvious, the lecturer said, from the whole consideration of the subject, that the drapery of the figure of the great period of Greek sculpture was not an ideal evolved by the sculptor, but represented the most perfect arrangement of the dress as actually worn; and it was remarkable that in the period of the most highly idealised sculpture we found the most lifelike and least conventional treatment of the dress. The lecture was illustrated by a large and most interesting collection of lantern slides from Greek sculpture and from dress arranged on living models.*

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The Grafton Gallery.

THE Munich Art Exhibition at the Grafton Gallery only calls for a brief notice, for its value consists chiefly in the contributions of two artists, Herr von Kaulbach and the late Herr Lenbach. Herr von Kaulbach's portraits, which form the chief portion of his contribution, are excellent in composition, drawing, and character (notice especially "Fräulein F.," 114), and they are free from that heaviness and dinginess of colour which seem the besetting sins of the modern German school. From this defect Lenbach's are not free, and a collection of a good many of his portraits confirms us in the impression we have always had, that the praises of his work which appeared everywhere at the time of his death a year or two ago were somewhat exaggerated. He had a wonderful power of characterisation, of which his well-known portrait of Bismarck (which is included in the exhibition) is a remarkable example; and a portrait of a lady, "Frau Geheimrath Jost" (148), is remarkable in the same way; but the portrait of Gladstone (143), however powerful in expression, is spoiled by its heavy handling and disagreeable colour. There are three examples of Herr von Uhde's naturalistic treatment of the life of Christ, of which "The Sermon by the Sea" (250) is pleasing in character and expression, though not in colour. Among the others there are many things ugly and fantastic, and but few to pause before. Herr von Bartels' "Meditation" (8) is a good study of a fisher-girl seated among the dunes; Herr Cairati's "Mantua" (25) is a good architectural picture of the old castellated walls red in the evening sunlight; Herr Kaiser's "Coming Thunderstorm" (104) is a landscape of some power; Herr Samberger shows a rather fine head under the title "Poetry" (195); Herr Walter a "Study of a Head" (245) which is effective both in expression and lighting; and Herr Zimmermann's "Christ" (271), a half-length figure, is solemn and dignified. But the exhibition as a whole illustrates the poverty and (in some cases) the grotesqueness of modern German art.

* It is to be regretted that the second of these admirable lectures was very poorly attended, which, we suspect, is owing to the time first advertised having been altered from 5 p.m. to 3 p.m. This was announced as far as possible, but it is always difficult to ensure that people take note of a change of this kind, and it is unfair to an able and learned lecturer to put him at this disadvantage.

Mr. Hitchens' Pastels.

AT Messrs. Walker's Gallery, 118, New Bond-street, is a small collection of landscapes in pastel by Mr. Alfred Hitchens which contains some very beautiful work, and shows what fine landscape effects can be obtained in this medium of colour. The subjects are largely taken from the grand country about Ballachulish and Loch Linnhe; among these a view in the Pass of Glencoe (22) is particularly fine, and others in the same neighbourhood may be noted; also "A Mountain Path" (21), which reminds one somewhat of one of Alfred Hunt's water-colours; "Pines beside the Loch" (17); "Springtime, Windsor Park" (18), a beautiful study of forest effect; "At the Foot of the Mountains" (19); "The Rising Moon" (30); "By the Side of the Loch (Scammadale)" (1); these are among the best, but all are good. Mr. Hitchens exhibits some good life-size portraits in pastel also; but it is in the landscapes that the real interest of the exhibition lies.

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Some Minor Exhibitions.

THE landscapes by Mr. J. A. M. Lomas exhibited at the Quest Gallery in Bond-street may be characterised (though they are not specially called so) as decorative landscapes, in which there is no attempt at literal translation of nature, but the representation of broad effects of light and composition in flat tints. Though we cannot call this landscape-painting in the true sense of the word, in their own category these works are very effective and suggest a good deal of the poetry of nature, Nos. 10, 11, and 12 especially, and as an effort in a special field of art they are of interest. In a gallery attached to a private house (17, Cliveden-place, Eaton-square), Mr. Hubert Medlycott is exhibiting a collection of water-colours in which architectural subjects, views of cathedrals and bits of the street architecture of ancient cities, play a considerable part. The "Old Clock Tower, Dinan" (1) is a delightful piece of architectural picturesque; among the London subjects "Old Chelsea Church and Wharf" (13) and "Battersea Bridge when Building" (17) are excellent specimens of water-colour art, the latter especially, which is perhaps the best thing in the collection. "Porte de Gand, Bruges" (33) is noteworthy for its fine colour; and "Boats at Ostend" (34) is a charming little reminiscence of the effect of the white-sailed boats on a calm misty day, looking like ghosts of boats on the still water. At the Lyceum Club a room is filled with the paintings of "The Advisory Board of Painters" connected with the Club, among which may be mentioned a fine and pathetic picture by Mdme. Canziani; some interesting studies of effects of twilight and artificial light by Miss Ida Lees; and a pastel by Mrs. Deric Hardy, "Fairy Tales," a very good figure composition with two charming children in it.

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Putting Architects up to Tender.

FROM a newspaper report of a recent sitting of the Carmarthen Board of Guardians it appears that the Board, as a means of settling what architect should be employed to rebuild part of their workhouse which had been burned, adopted the plan (alike discreditable to themselves and insulting to the architectural profession) of applying to various architects to know for what commission they would undertake the work. One firm, Messrs. G. Morgan (of Carmarthen) very rightly replied that 5 per cent. was the professional standard, and that no architect of any training or standing would depart from this scale in any important building. This lesson had no effect upon the Board, who by a majority of 18 to 11 appointed a local architect who undertook to do the work at 1 per cent. on the contract, "and would not require any clerk of works" (!)

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## REINFORCED CONCRETE:

### JOINT REINFORCED CONCRETE COMMITTEE.*

WE reprint the following information from the last issue of the Royal Institute of British Architects' *Journal*:—

The following statement, which was read at the first meeting of the Concrete Committee, gives an idea of the nature and scope of the investigations the Committee has been formed to carry out:—

This Committee has been nominated by the Royal Institute of British Architects to consider and report upon the use of reinforced concrete in buildings and other structures. As we all know, reinforced concrete is largely used in other countries—in America, France, Germany, Italy, Russia, Egypt, etc.—and is now coming into use here, but very slowly.

The conservative nature of our people may be responsible for part of our reluctance to use reinforced concrete, but another reason why we lag behind is that no responsible or representative body of skilled men—no one man even whose name carries great weight—has pronounced in its favour. Also Building Acts and By-laws do not facilitate its adoption. The architect and engineer hesitate to use it until the material and what can be done with it has been generally agreed upon; until, in fact, they have some assurance that it may safely be employed.

Now, as the Royal Institute of British Architects has been the promoters of this Committee, you may naturally look to its representatives for some general idea of the line of action to be taken. Exactly what may be done must be settled by the Committee itself; and in submitting to you a general rough sketch idea of a programme, it must be understood that the sketch is necessarily only an introduction, and not in any way a finished scheme, for your guidance.

First, then, it appears that we should inquire into what has been done already, and ask the owner or architects or engineers of such work for particulars, and how the buildings have stood the test of time.

We shall have a Secretary who can apply to railway companies, owners of mills, private owners, architects, engineers, and others, who will no doubt willingly place the results of their experience at our service. Some of us may visit works; some have actual experience in the new system; and when we have digested this knowledge we can as a body express an opinion as to its usefulness, its safety, its permanence, and other qualities, which opinion we may fairly hope will be of value to our fellow countrymen.

Something of this kind has been done already in other countries. The German Association of Architects and Engineers in conjunction with the Concrete Association have drawn up a report; the American Institute of Civil Engineers in conjunction with various other bodies have appointed a Committee which is at present engaged on similar work, and it is suggested that we should apply for copies of such information or interim reports as may be at its disposal; the French Government also is said to have appointed a Committee to prepare a set of recommendations.

A general expression of opinion as to its value would not help other architects or engineers very much; we should therefore consider and report upon the following amongst other matters, as to which there is doubt:

(1) Whether such constructions are permanent or likely to deteriorate with time. The steel skeleton is said by all those who have studied the subject not to rust, and even when steel is embedded in a material such as coke-breeze concrete containing a proportion of sulphur there is said to be no rusting. As any reduction in the section of the metal by rusting might endanger the work,

* The Committee consists of representatives of the Royal Institute of British Architects, the District Surveyors' Association, the Institute of Builders, the Incorporated Association of Municipal and County Engineers, the War Office, and distinguished scientists.

we should consider if it ever does rust, and under what circumstances, so as to advise upon any necessary precautions, or to reassure the doubters on this head.

(2) The resistance to fire. We shall have to consider what has been done in experimental tests such as those of the City of Hamburg Authorities in 1895, and of the British Fire Prevention Committee just made. Also the results of tests in actual fires in buildings such as the Baltimore fire, where the conditions were exactly those we have to provide against. We may thus be able to form definite conclusions of value to all interested.

(3) The method of contracting. There are about fifty different so-called patent systems, and it is usual to entrust the design of any proposed work to one of the firms who make a speciality of this class of construction, obtaining from that firm a guarantee of strength. This arrangement is probably quite desirable; but as a certain responsibility must always lie on the engineer or architect who accepts or recommends for acceptance any such design, it is desirable for us to define as best we may the responsibility of the parties.

For instance, it may be made clear that the contracting firm undertakes all responsibility; you may consider it wise to require that the drawings should first be submitted to the architect or engineer, and should be signed by the contracting firm or by some responsible person on their behalf. Some firms try to make a secret of their system, and object to showing the drawings.

It may appear to you that to accept a plan for floor or roof or wall or column or bridge or water-tank (all matters of construction in which we are supposed to be skilled) without making ourselves acquainted with what is to be done is dangerously foolish; and, if so, your opinion may have sufficient weight to settle that question. Captious interference we should all deprecate of course, but the engineer or architect must be in command, and must know, not only what is proposed to be done, but how it should be done.

We can still leave ample freedom to the experts in the design of the work, in the choice of material and method of carrying out the work.

(4) The materials also will no doubt be considered; these are—

(*a*) The metal, iron or steel.
(*b*) The cement.
(*c*) The sand.
(*d*) The aggregate, ballast or stone, etc.

For the steel and the cement we shall have the standard specification of the British Engineering Standards Committee, and must inquire if qualities of the standard kinds are suitable for reinforced concrete work.

As to the sand, you know how universally the qualities of good sand are given as *clean* and *sharp*. We have to review all that in the light of recent knowledge. In America many experiments have been made which show that cleanness is not so all-essential as has been supposed, and that washing does not improve every sand. These results were arrived at by experiments on material not only seven days or twenty-one days old, but were made on pieces of various ages up to three years.

Certain work in that way is being done here, and when we have collected and considered the facts our opinion based on knowledge should be of value.

Next as to sharpness. You may find that sharpness is not so important as variety in size of the grains of sand. Compactness and freedom from voids appear to play a most important part in the strength of mortar, and that freedom from voids may best be obtained by variety of size. These questions we should study with an open mind, free from ancient prejudice.

Then there is the aggregate of stone, gravel, coke-breeze, etc., what proportion to use, what material to use to get the best results in given cases. If we find that washing the sand may be saved, and that concretes of leaner mixture may be used than hitherto with equal safety, we shall have done some good.

Questions arise as to the mixing. We want to know what is the proper way to mix our concrete; how much water to use; whether the sand, gravel, and cement should all be mixed together and the water added, or whether the sand, cement, and water should be made first into mortar and the gravel or stone added, as recommended by some. We want to know the value of mixing machines, and whether it is wise to allow a smaller proportion of cement, say 10 per cent. less, if the concrete is mixed by machinery, owing to the fact that it is better mixed. Into all these we must inquire, so as to be able to advise our brother architects and engineers.

(5) Another subject is the carrying out of the work. Should we require that only skilled men under skilled supervision be employed; that the work be kept wetted, be stopped in frosty weather; how long the centres should be kept up, etc.? All these can only be indicated as matters for your consideration and judgment, and upon which an authoritative pronouncement would be desirable.

(6) One important question which we must consider is what are the safe stresses to allow in various cases. There is apparently no such general agreement upon the safe stresses and methods of calculation as we find in regard to steel or iron, and it is possible that in the present state of knowledge we cannot tell with sufficient accuracy what are the internal conditions in a non-homogeneous beam, to enable us to determine rules which are not open to criticism or improvement with the advance of experience.

Reinforced concrete is, however, being used, and there is need of rules—tentative though they may be—to guide us until we get formulæ which will command general assent. Much has been done in the way of experiment in recent years, so that we are in a much better position to test any of our theories by the results of actual work.

It may be found desirable to refer this part of our subject to a Sub-Committee of those amongst us who are specially qualified by reason of their mathematical attainments to pronounce upon it.

Our Commission is limited to preparing *suggestions and recommendations*, and therefore any report that may be made will be in the way of advice and not as fixed and immutable rules.

How far our Building Acts and By-laws should be altered to permit of the use of reinforced concrete walls may also be considered, because as they stand they interfere with the reasonable use of the material.

There is a general feeling that our regulations as to walls should be relaxed in all buildings, at least in rural districts. The agitation for reform in this respect has not yet spread to urban districts, save in regard to the material we are studying; and it certainly seems that if the strength is increased by the use of a metal skeleton the thickness of a concrete wall may be correspondingly reduced.

We fortunately have with us municipal and county engineers and district surveyors whose experience in the working of these by-laws will be of value in restraining too much reforming zeal should we display it.

All the questions thus briefly reviewed are matters upon which the general body of architects and engineers and others interested would no doubt value the consensus of opinion of skilled and disinterested men who have studied the subject. Such an opinion will help the introduction of the material by giving those who hesitate to employ it through want of knowledge and fear of the responsibility, the assurance of the conditions under which it may safely be used, and give that confidence which is at present lacking. It will call attention to its advantages where it has any, such as road bridges over railways, which at present deteriorate rapidly with rust.

## THE ARCHITECTURAL ASSOCIATION:

### FENESTRATION.

AN ordinary general meeting of this Association was held on Friday evening last week at No. 18, Tufton-street, Westminster, Mr. E. Guy Dawber, President, in the chair.

The minutes were read and confirmed, and Messrs. H. S. Watling, E. J. Tanner, and A. R. Ashby were elected members.

It was announced that the first summer visit would take place on May 12 to All Saints' Church, Tooting (Mr. Temple Moore, architect), and the second summer visit on May 26 to Marsh Court, Hampshire (Mr. E. L. Lutyens, architect).

It was also announced that on May 8 the Sketching and Measuring class would commence, and that the annual dinner will be held on May 17 at the Georgian Hall of the Gaiety Restaurant. Tickets, price 5s., may be obtained at No. 18, Tufton-street.

*The New Officers.*

The Chairman then read the scrutineers' report on the election of officers for session 1906-1907. The following is the result of the election:—

President, *R. S. Balfour.
Vice-Presidents, Walter Cave, 394 votes, and *A. Needham Wilson, 392.
Council, *E. Guy Dawber, 346 votes; *Arnold Mitchell, 279; *L. Ambler, 265; *J. B. Fulton, 260; *A. Maryon Watson, 253; *J. Murray, 243; W. Curtis Green, 201; Arthur Keen, 193; and E. W. M. Wonnacott, 183.
Hon. Treasurer, *Henry T. Hare.
Editor of the A.A. Journal, *Maurice E. Webb.
Hon. Librarian, E. Gunn.
Hon Secretaries, *H. Tanner, jun., and C. Wontner Smith.

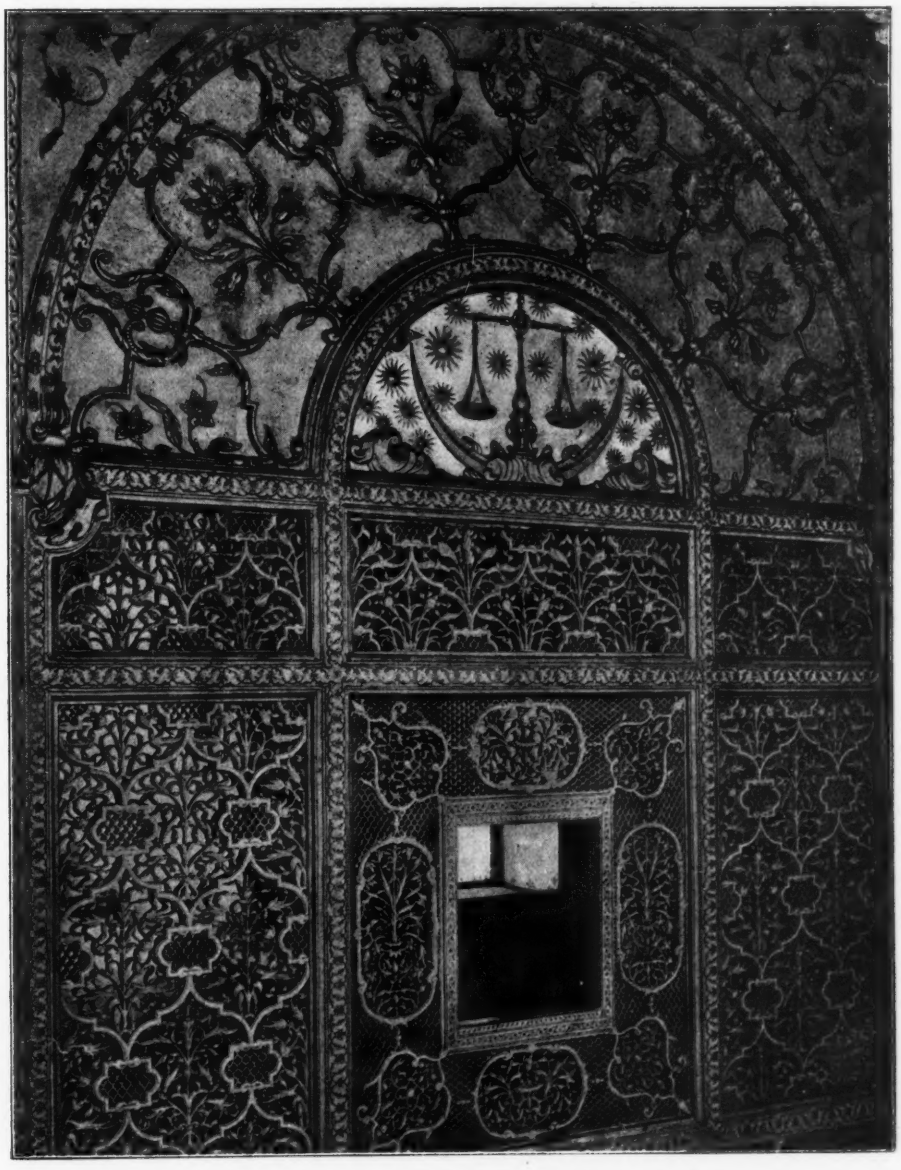

*Fig.* 1. *Window at Delhi.*

*Fig. 2. Ravenna: S. Apollinare in Classe.*

Hon. Solicitor, W. H. Jamieson.
Hon. Assistant Librarians, H. J. Worrow and Percy May.

The following were not elected :—

F. D. Clapham, 179 votes; *J. S. Gibson, 171; *J. Maclaren Ross, 149; Theodore Fyfe, 119; *E. A. Rickards, 110; R. Douglas Wells, 79; R. F. Wheatly, 70; S. J. Tatchell, 68; and A. N. Peckham, 66.

On the motion of the Chairman, a vote of thanks was accorded to Messrs. T. L. Dale, G. F. Blackburne Daniell, R. A. V. Harrison, and T. J. Wetherall for acting as scrutineers.

*Votes of Thanks.*

The Chairman said that they would miss their late Treasurer, Mr. F. Hooper, very much. Mr. Hooper had been treasurer for the last five years, and the amount of time, trouble, zeal, and devotion he had given to the Association could not be overestimated. The Association must desire to accord their hearty thanks to Mr. Hooper for all he had done for them during the last five years, and he accordingly moved a hearty vote of thanks to him.

This was unanimously agreed to, and a vote of thanks was accorded to the School of Design Visitors and to the Press.

Mr. Water Cave then read the following paper on "Fenestration" :—

*Fenestration.*

"Fenestration—or the disposition of window-openings in relation to the structure—is a subject which is inseparably connected with the whole history of architecture, and the manner in which light was introduced into buildings has always been one of the most important elements in determining their style.

The influence of climate, the necessity for protection, the manufacture of glass, and the relative positions of buildings have all affected the size and shape of windows; and in the following paper it is proposed to deal with the subject in some sort of chronological order, which will enable the development of fenestration to be more easily followed, and to show how these various influences in different countries have left their mark on the architecture of the time.

In all the great buildings of past ages, which consist of halls arranged side by side, the method of admitting light was constructionally the same. We find in the vast temples of Egypt the same arrangement of clearstory which the Gothic builders brought to such a pitch of perfection. The central hall, or nave, was taken up higher than the side halls or aisles, and this plan in itself was a determining factor in the design.

In the gigantic temple at Karnac, which may be taken as typical of the Early Hypostyle buildings in Egypt, we find a clearstory which was never glazed; and in the temple at Kalabsche, built during the Roman occupation, we find the same system employed to light four successive chambers, one behind the other, each, of course, having the ceiling at a lower level. The introduction of light generally throughout a building was not considered a necessity—partly due, perhaps, to the mysterious rites of the Egyptian religion, and partly, perhaps, due to the wonderfully-brilliant skies of the East, which not only gave the smallest openings their utmost value, but made a cool and dim interior of infinite value in the desert.

In later times there is evidence that the domestic buildings had openings in the front walls over low screens, and in the temples of Edfu and Dendera the same arrangement can still be seen.

But this method of admission of light must not be treated at length in a paper dealing with fenestration, except as an instance of the simplest method; for in reality these openings were only the omission of the wall-screens, either between the columns and the lintels of the clearstory, or between the columns in the façade, and to pursue this subject would partake too much of an archæological discussion.

*Grecian.*

When we consider Grecian architecture and the method in which the interiors of those wonderful temples were lit, we are faced with a greater difficulty and more uncertainty. In the Erectheum and the great temple at Agrigentum, in Sicily (420 and 480 B.C.), we have, according to the accepted restorations, windows in the side walls, but these are both exceptional instances, and even here the problem of how the central part was lit remains a matter of conjecture.

In the Erectheum the three windows which appear to have existed are so placed that they seem to have been almost an afterthought. The windows themselves are square-headed, rectangular openings, about two squares in height, tapering towards the top, and placed somewhat uncomfortably as regards their heads which come some distance below the caps of the columns; they were probably fitted with pierced marble screens.

In the temple at Agrigentum the windows appear to have been somewhat narrower in proportion, and the heads so arranged that they more nearly line with the caps, and seem to have formed a part of the original design, but have a very crowded effect.

Both these examples, as has been stated above, are exceptional, and may be taken as proving the rule that the Greeks did not consider that openings in the screen-walls was the best form of lighting their temples.

All Greek architecture came, we know, from the South, the land of brilliant sunshine, where windows, as we understand them, were either unknown or of quite subsidiary importance.

They were very few in number in all Classical work, and never placed to form more than one tier. We can thus, I think, draw the conclusion that windows, such as we require, are never really successful in columnar architecture. The Greeks felt this, and never developed the scheme, and the modern attempts to combine fenestrated with columnar architecture show the impossibility of making a happy compromise between two totally conflicting styles. Take the instance

* Members of present Council.

of the Royal Institution in Albemarle-street, where we find a single Corinthian order the full height of the façade, in itself well proportioned, but its general effect marred by the introduction of windows, which look mean and squeezed in between the columns, and spoiling the effect of the connecting screen-walls.

If the columns are detached and in their proper proportion, either the windows are darkened and become too small, or the general effect of the façade is weakened by bad intercolumniation if the windows are designed to give their full lighting value to the interior.

That the Greeks had a method for lighting their temples is generally accepted by all archæologists, and it seems evident that if it was not from the side walls, it was from some form of roof or clearstory window. There is, however, one other theory which has a literary foundation. In the tragedy of Iphigenia, in Tauris, it is actually stated that the intervals between the triglyphs in a certain temple were left open, and were to be utilised as a means for thieves to enter. This is a possible solution; but the evidence of words is apt to be misleading in such a case, and it is more probable that some form of clearstory adapted to a sloping roof, as suggested by Mr. Fergusson in his "History of Architecture," was the real method of lighting these interiors, and in support of this we have the evidence of the Egyptian temples. St. Peter's, Eaton-square, is an attempt, and a successful one, to light a church in this method. But, again, the subject becomes of more archæological than architectural interest, and it is not till we come to the great buildings of the time of the Roman Empire that the admission of light came to be considered as the integral part of the design.

It is thus apparent, and the following remarks will make it more evident, that fenestration became more important as the art of building advanced westward and northward until it reached its most interesting development in our own country, where the necessity for light is of such great importance.

*Roman.*

The great eye of the Pantheon is a good starting-point for a more detailed consideration of the subject. In this truly remarkable building we have an interior completely and perfectly lit by one central opening in the dome, 27 ft. in diameter. The total cubical contents of the Pantheon represent nearly 2,000,000 cubic ft. (1,934,600), which gives the extraordinary result that each square foot of skylight lights 3,380 cubic ft. of space. This instance has been quoted to show the enormous value of a vertical light, which, according to generally-accepted rules, can be taken as about thirty times as valuable as an horizontal one.

The arch and dome construction of the Romans gave an opportunity for windows, which were introduced high up beneath the vaulting and above the four barrel arches supporting the dome; these were usually great semi-circular openings, and divided by massive mullions into three divisions, finished ,according to Violett le Duc, with frames of bronze enclosing panes of glass, alabaster, or simply lattice-work. This, it seems probable to suppose, was the usual way of lighting the great central courts of the Roman buildings, and from their plans we know that the various rooms ranged round this court must have been lit only by borrowed lights from the central court itself.

*The Influence of Glass.*

We now come to a very important consideration in fenestration, and that is glass. During the Early Eastern work, briefly referred to above, both in Egypt and Greece, there is nothing to lead us to suppose that glass was used in windows. The openings in the Greek temples were almost certainly unglazed or fitted with marble screens, and the position of these, either in the frieze or as concealed dormers, would not make it an absolute necessity. That glass was in use for domestic utensils at a very early date is undoubted, but it is not until the beginning of the Christian era that we have a definite reference to its use in windows. Pliny, who died in 113 A.D., describes, in his "Laurentine Winter Villa," a glass door and curtain, and we may assume that, at least in some cases, glass was used in screens to light the smaller rooms round the great courts of the Roman buildings. It is interesting to note that the great group of the Laocoon was found in one of these inner chambers with no external opening.

Thin slabs of alabaster were, no doubt, used in some instances, similar to those still to be seen at Orvietto Cathedral, and pierced marble screens, like those from the Taj-Mahal (built by Italian workmen in 1630), Agra and Delhi, India (Fig. 1); and plates of glass, 7 in. by 9 in., cast in marble frames, are still to be seen at St. Sophia, at Constantinople, which probably date from the building of the church by Justinian, A.D. 540.

Bede mentions that in 680 A.D. Abbot Biscopus sent to Gaul "manufacturers of glass for windows," which shows that the habit of glazing windows was by no means common in the west of Europe at that time. Even in England during the XIIth century glass was not in common use, for there are instances of church windows, which were closed by shutters of wood or stone, which were unglazed.

*Roman Client and Architect.*

But to return to the Roman buildings; it is of importance to note that great regard as to aspect was observed. In the Baths of Caracalla—a typical building—the lights beneath the domes opened towards the most favourable points of the compass. Vitruvius, in discussing this subject of orientation, says that "due regard should be had to climate (*i.e.*, latitude), for the same arrangement will not suit in Egypt and Spain, and it must be different in Pontus and in Rome. In northern countries the buildings should be vaulted, well closed in, and their openings small facing a warm aspect. On the other hand, in southern countries, subject to the burning heat of the sun, the openings should be large and face the north and north-east."

In Cicero's letter to Atticus we have a very interesting passage where he quotes his architect's reasons (which seem to be somewhat modern!): "Know that in blaming my windows as too narrow you are finding fault with my architect, Cyrus—happily it is only with the architect. When I was saying the very same thing to him he pointed out to me that wide windows looking into a garden did not offer a prospect so agreeable to the sight. For let A be the eye of the spectator, B and C the object he sees, D and E the rays proceeding from the eye to the object—you understand what follows!" This unfinished demonstration, is not in itself particularly convincing, but may be taken as an instance of mystifying the client—which is not entirely confined to the time of the Roman Empire. He further adds, "If you find anything to criticise in other parts, I shall always be prepared with a

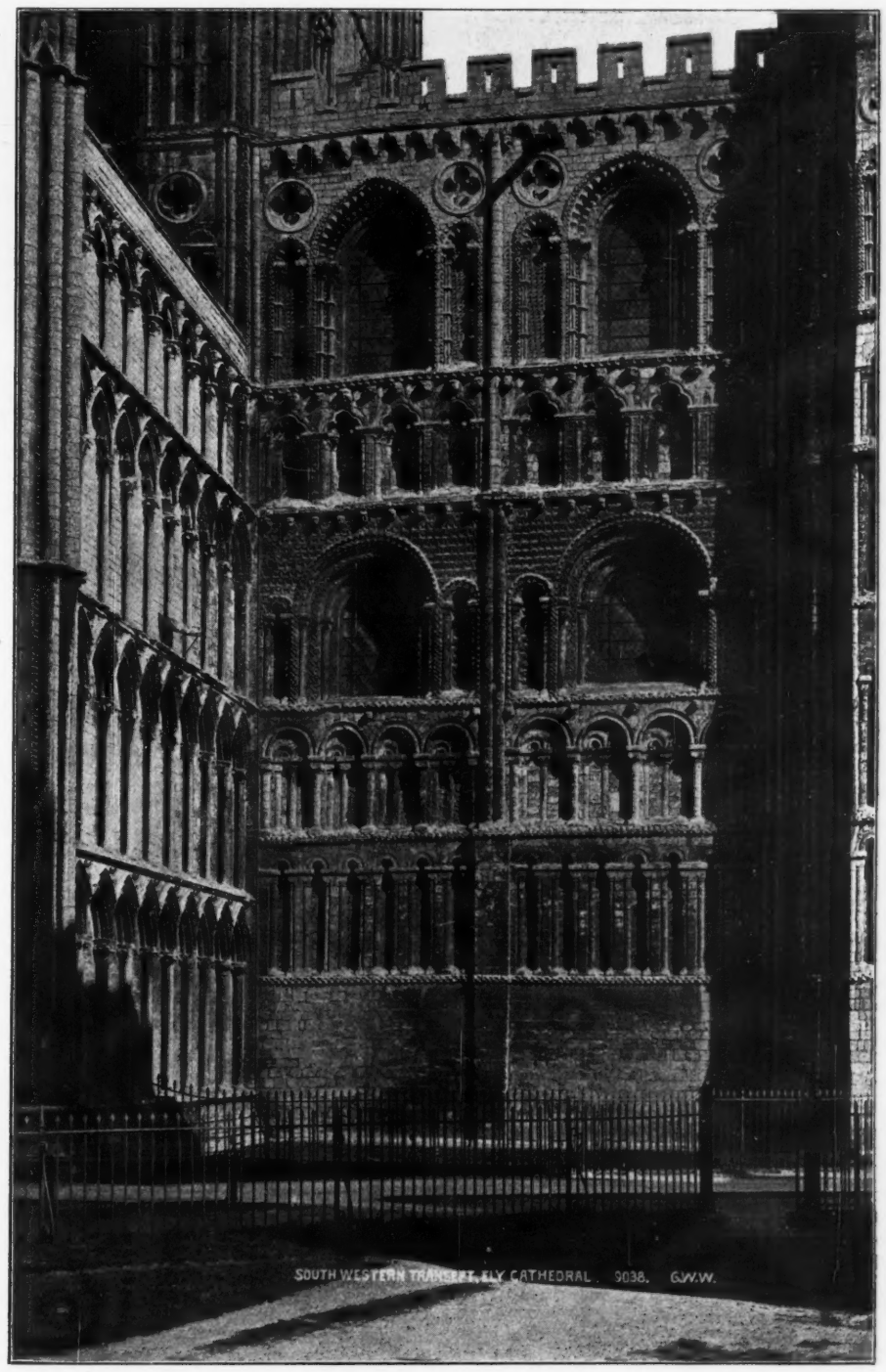


*Fig. 3.*

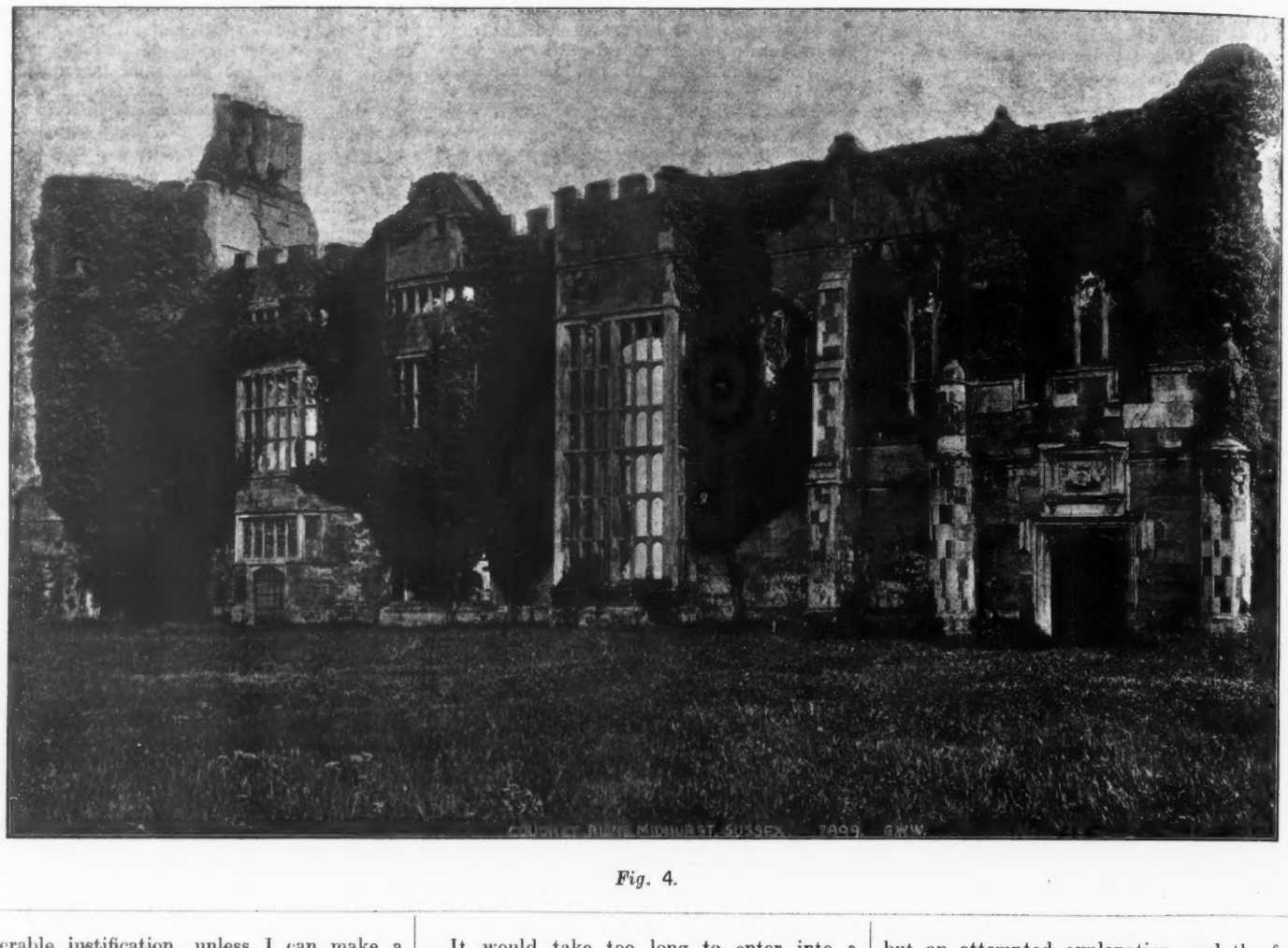

*Fig.* 4.

tolerable justification, unless I can make a change for the better at a smaller cost!"

The true Roman architecture was based on the use of the Greek lintel construction combined with the Etruscan arch, and, without going into the details of the origin of the latter, it is sufficient for our purpose to note that this combination gave an opportunity of lighting buildings from the side walls. The intercolumniation of the Greeks, as has been pointed out, precluded a satisfactory form of fenestration, but, with the pillars placed at a distance from one another equal to their own height, the intervening screen-wall was well adapted, if not obviously intended, for window-openings. In later times by superimposing one order above another, giving a series of stories, the opportunity for systematic fenestration was attained, and the windows thus became an integral part of the design. This plan ultimately led to the very elaborate wall arcading, which is seen in so many buildings from 500 to 1200 A.D.; but its use as a means of systematic fenestration was rare, and, as a rule, was a mere necessity of construction.

*Early Christian Architecture.*

In many of the Early Romanesque buildings in Italy we find a curious arrangement of windows. For instance, in the great basilica of S. Apollinare in Classe (Fig. 2), at Ravenna, begun in 538 A.D., the window-openings are very small, and made quite subordinate to the wall arcading on the exterior; but from the inside the spacing of the windows is most thoughtfully carried out, as in the case of the sister church of S. Apollinare Nuovo.

This system of designing the window-openings from the inside with little regard to exterior is typical of a people who were developing a style of architecture suited to their western requirements based on the eastern tradition; and it is highly probable that the Early Christian antagonism to all the heathen practices may have led them to ignore their exteriors, on which the Greeks spent so much thought and labour.

In the Byzantine style the same remarks, to a certain extent, hold good, but it is now proposed to leave the eastern architecture and follow the progress of fenestration westward, and see how the Gothic builders treated their window-openings.

It would take too long to enter into a comparative detailed account of the various national styles in Europe, and we will at once proceed to the English Gothic buildings.

*English Gothic Windows.*

The first thing to be noticed is the same arrangement of subordinating the windows to the external wall-decoration, as has been described at Ravenna. These windows in our Early Norman work were small, and their size was due to various causes; the desire for protection against enemies in those troubled times when churches (and especially their towers) were used as places of defence and refuge; the difficulty and expense of obtaining glass, resulting in their generally being unglazed, and only a shutter of stone or wood used to keep out the weather; and, as has been before mentioned, the form of window itself came from the East, or the land of sunshine.

The treatment of the window-openings in the early church towers is very effective. In most cases they were small, and arranged in groups high up, with a baluster-shaft dividing the lights; the main part of the tower was left plain, and great dignity is thus produced. With the advent of the pointed, or lancet, windows of the XIIIth century a real attempt was made to make a design in fenestration both from the inside and out. In the lofty square-ended fronts of the Cistercian buildings we find the windows ranged in deeply-set arrays of varied arcading. But, as a rule, the Early Gothic windows in the arcades were subordinated to the general wall scheme, and at Crowland, Durham, and Ely (Fig. 3), the Benedictine monks built tier upon tier of arcaded galleries, with occasional windows, which reminds one of the Romanesque work at Pisa.

Towards the end of the XIIIth century came a most remarkable change in the window treatment of our great Gothic buildings. "which," as Mr. Prior says in his valuable work on Gothic Art, "must be judged as no mere freak of a designing architect, but as a revolution worked by Gothic creativeness in some thirty years, such as the centuries of Egyptian or Greek art did not accomplish."

Inventors are rarely theorists; the invention must be suited to the necessity, before everything, and the theory may follow if anybody cares for it—for a theory is nothing but an attempted explanation, and the fact must exist before it can possibly need explaining.

The history of the development of tracery is so well known that I do not propose to dwell on it now. In its earliest and best stages it was always treated as a part of the whole design, and the masons used their stonework with a due regard for its constructive possibilities. The development of glass-painting in connexion with window-tracery is a branch of this subject on which a whole paper might be written.

The lancet windows, especially those on such a grand scale as Chartres and Paris, measuring 6 ft. or 8 ft. across, made a magnificent field for the glass-painter such as he did not get again till the end of the XVth century, when homogeneous Gothic art was a thing of the past. The increasing richness of glass was for a long time only a part of the general scheme of enrichment, and the development of tracery was really due to the mason; but with the rise of individualism, which was one of the main causes of the decadence of Gothic, the extremely decorative character of this form of ornamentation called for wider fields for its display. At Selby the combination of tracery and glass reached such a pitch that the tracery practically becomes the cloissons of a great masoned enamel.

With the introduction of the transom to divide these great windows into tiers—each division fitted with niched saints—we seem to feel the desire to recall the great sculpture galleries and fronts of Wells, Lichfield, and Exeter. Gradually the glass-painter exercised more and more influence over the mason, and thus we find, at Gloucester and King's College Chapel, Cambridge, windows of such a size that the intervening wall spaces are only piers to carry the lofty stone vaults, and these windows, fitted with the magnificent glass of the period, reach the utmost limits of engineering skill in this direction.

It is, perhaps, scarcely fair to notice here a modern parallel, but, in studying these wonderful examples, one cannot help thinking of the modern plate-glass windows of our streets, where the visible means of support are reduced to a minimum, and all the skill and knowledge of material we have at our disposal is utilised to obtain the greatest possible amount of glass space.

There is, however, a lesson to be learnt

from the two cases which may, for practical purposes, be taken as parallel.

With the Gothic builders the glass itself was set back at a considerable distance from the wall-face on the exterior, and, though the mouldings themselves had become comparatively shallow with the growth of the Gothic style, still they were not ineffective, and served to give a certain amount of shadow.

In too many instances the exact reverse is the case to-day, and if the great sheets of plate-glass in our modern shop-fronts were recessed, their hopelessly bald effect would, to a certain extent, be minimised. It may be taken as a broad rule that the larger the window the more the glass should be recessed from the outer wall.

With the decay of Gothic, which, for purposes of classification, may be taken as about 1500, a foreign influence began to make itself felt in England, and the interest in the national style, which had been mainly confined to the ecclesiastical structures, was transferred to the domestic buildings after the dissolution of the monasteries under Henry VIII.

*The Tudor Period.*

Italian art was first of the long series of outside influences which affected English architecture. The great Renaissance in art and letters may be said to have begun with the fall of Constantinople in 1453, which Mr. Gotch says "flooded Western Europe with Greek scholars and Greek literature. Italy was the centre of the new movement which eventually reached the distant shores of England, but, as the stream flowed across Europe, it became tinged with the peculiarities of the various lands over which it passed." But before the classical traditions had really been thoroughly assimilated by the English builders there arose, under Queen Elizabeth, a marvellous growth of stately country houses, in which the followers of the fast-perishing Gothic style made their last effort to accomplish something new. The great country houses of the XVIth century, with their stone-mullioned windows in many divisions, fitted with well-proportioned leaded glazing, are to be found scattered up and down the length and breadth of the country. The wonderful ease with which this form of fenestration was adapted to the great façades of Kirby and Montacute, as well as to the modest gables of the Cotswold manors, took such a hold on the national mind that this style of window may be said never to have completely died out. The Gothic origin of these windows is obvious, and at Cowdray House, in Sussex (Fig. 4), the growth is well exemplified.

The necessity for a defensible house had by this time disappeared, and the reaction was, like all reactions, inclined to the opposite extreme; and we find, in cases like Astley Hall, Lancashire, and Little Moreton, a range of windows practically dividing the façade into alternate horizontal bands of glass and solid wall surface.

The development of the bay window is also one of the striking characteristics of these times, and they are to be found in all kinds of buildings. From the earliest date we see them almost invariably on the daïs of the great halls, and in later examples, as at Bradford-on-Avon (Fig. 5), they become the most important feature in the whole composition.

The proportions of these mullioned windows is worthy of careful consideration. The single transom was generally placed so that its lower line was nearly in the centre of the window. The proportion of glass to mullion was usually one of mullion to two and a half of glass. The glass-line took the centre of the mullion, and the face of the mullion, if not flush with the external wall, had only a small member beyond it. The mullions were about twice as deep as they were wide. Where more than one transom was used the divisions became less towards the top—with some curious exceptions, as at Kirby Hall. The proportion of the lead-glazing varied considerably.

In the earlier type of houses, and in the smaller examples—as, for instance, in the Cotswold district—the windows were small, and the amount of plain wall surface thus produced made up a composition in fenestration which can hardly be equalled for its dignity and sense of repose.

In many instances we find that the windows decreased in size, and in the number of lights, as they ascended the gable, and were kept a long way from the angles. This satisfies the eye—as a logical arrangement—for the mind easily follows the relative size and proportions of the rooms within, and it also gives that peculiar conviction that the house has an inside, much as we can distinctively feel by a glance at a face whether there is really a mind behind it.

As a contrast to the diminishing number of lights as seen in the gables of the Cotswold manors, it is of interest to notice the arrangement of the window-openings in the towers of many of the Lombard churches. At the Cathedral of Sienna we see the exact reverse of this treatment, and from the single light on the lowest stage of the tower we find an additional light added at every step till at the top there is a range of seven lights, the object probably being not only to produce an effect of lightness, but actually to diminish the amount of masonry.

Small windows, well placed, undoubtedly make for good architecture, and it is not always possible to convince those concerned that a room can be overlit; the modern building requirements seem especially framed to prevent good proportion, both on account of the placing of the windows in relation to the floor and ceiling and as to their size in proportion to the room itself.

These regulations may be of use for ignorant builders in crowded towns, but are sadly hampering in the country.

But the classical ideas which had, by the end of the XVIth century, gained a firm foothold in the interior of the house, at last showed themselves both in the arrangement and details of the windows, and the outer member of the jamb developed into the architrave, though the mullion and transom held its ground. Woollaton Hall is typical of the transitional period, but the effect of the fenestration cannot be considered entirely satisfactory. It has all the defects of proportion and misuse of classical detail

*Fig. 5. Kingston House, Bradford-on-Avon.*

inseparable from the attempt to combine an imperfectly-understood style with our own traditional methods. But if we consider what a revolution was taking place in all matters connected with art, we cannot fail to pay a tribute to the builders of these great country palaces, which are not only stately and picturesque, but essentially English.

[Owing to pressure of other matter, we are compelled to divide our Report of the meeting. The conclusion of the paper and some notes of the discussion which followed will appear in our next issue.]

## THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

### VII.—SOUTH-EASTERN HOSPITAL.

AN additional spring visit was arranged for Saturday, April 28, so that an opportunity might be taken of inspecting the reconstructed South-Eastern Hospital, which will shortly be ready for patients. This institution, which belongs to the Metropolitan Asylums Board, is situated in the Old Kent-road, S.E., and is intended for the treatment of scarlet and enteric fevers and diphtheria. Four hundred and eighty-eight beds are provided in ten pavilions and two isolation blocks, each building having two stories, and the whole is schemed to advantage upon a site measuring 11 acres, representing approximately forty-four beds to the acre.

The hospital now completed is a reconstructed scheme, with the exception of the administrative block (which has been rearranged and enlarged) and two pavilions built in 1896 and two nurses' homes in 1894. The wards in the pavilions contain eighteen to twenty-four beds, and each block has additional separation wards of one or two beds. The isolation blocks have wards of varying sizes from one to six beds.

Messrs. T. W. Aldwinckle & Son, the architects, have made a very successful reconstruction, and have introduced many interesting and new matters of detail. We see, for instance, that the sanitary annexes are situated in the centre of the length of the wards instead of at the far end, thus adding to the convenience of working whilst outweighing certain objections to the change of position.

The floors of the wards are finished with mosaic paving for cheapness, durability, and facility of cleaning compared with wooden floors. The wards are 28 ft. wide, and have a lineal measurement of 11 ft. per bed, instead of the customary dimensions of 26 ft. and 12 ft.; this arrangement gives greater working space in the centre of the ward and allows the beds to stand farther from the outside walls. A cubic air space of about 2,000 ft. is secured for each bed. The sashes and hopper lights have two thicknesses of glass, all angles are rounded, including the terrazo skirting, and all the subtle, yet important, details down to the removable traps to the scullery sinks have received most careful study.

The warming of the wards is well considered, and a somewhat lower temperature is designed than is usually found. A low-pressure hot-water system, with augmented circulation, supplies warmth to radiators placed below the windows in the wards. Air is admitted behind the radiators, each of which has a metal inclosure with brass hit-and-miss gratings at the top and folding-doors to the fronts, so that the heat may be utilised to suit the open or closed position of the sashes. Foul air is extracted from panels in the ward ceilings by the agency of electric fans, and the proportions of inlet and exhaust have been suitably arranged.

The contractors are Messrs. Godson & Sons, of Kilburn, and the total cost of the work is about 123,000*l*. The work is full of intricate detail too extensive to deal with at the present time. The attendance of the architects at the visit added materially to the success and interest of the occasion.

A GARDEN CITY IN KENT.—Proposals are being formulated under the superintendence of Sir Robert R. Wilmot, Chairman of British Garden Cities, Ltd., for laying out the Wigmore estate, near Chatham, as a garden city. The projected plans provide for a public park and large gardens for all the houses, and the public buildings include a hall, a library, and schools.

## THE LONDON COUNTY COUNCIL.

THE first meeting of the London County Council after the Easter recess was held on Tuesday in the County Hall, Spring-gardens, Alderman E. Spicer, Chairman, presiding.

*Loans.*—On the recommendation of the Finance Committee, it was agreed to lend Camberwell Borough Council 1,818*l*. for street improvement; Kensington Royal Borough Council 3,355*l*. for street improvement; Poplar Borough Council 1,670*l*. for sewer and paving works; St. Marylebone Borough Council 44,850*l*. and 12,000*l*. for electric lighting purposes; and Shoreditch Borough Council 14,905*l*. for electric lighting. It was also agreed to sanction the borrowing by Lambeth Borough Council of 35,000*l*. for municipal offices.

*Vauxhall Bridge.*—The Improvement Committee reported as follows:—

"The Council, on May 19, 1903, upon the recommendation of the late Bridges Committee, approved the design, then submitted, of the new Vauxhall Bridge, and the proposed architectural and artistic treatment of the same, but reserved for future consideration the question of erecting propylæa on the abutment piers. Models have been prepared and designs submitted to us for propylæa which are suitable for erection on the bases as now constructed. With regard to the question whether any artistic treatment at all of the abutments should be attempted, we think that, unless something be done in this direction, the bridge will appear in every way incomplete and unsatisfactory. The alternatives are, therefore, presented, either of erecting propylæa on the abutments, or of covering them with large groups of statuary. There will be little difference in the cost of the two schemes, and as, in our opinion, the erection of propylæa will produce a much better effect than groups of statuary, we think the Council should sanction the erection of propylæa. We have caused the models of the propylæa, and copies of a statement describing the same, to be placed in the lobby of the Council chamber. One of the models (No. 1) is square and of plain design; the other (No. 2) has rounded ends and some decorative treatment of the sides. The total estimated cost of erecting, in granite, propylæa for both approaches to the bridge, in accordance with design No. 1, would be 12,600*l*., while, if design No. 2 be adopted, the cost would be 15,120*l*. We think that design No. 1 would be in greater harmony with the general features of the bridge than No. 2, and we propose that it should be adopted; but we would ask the Council to authorise us, if necessary, to introduce some slight modification on the Lambeth abutment. We have also considered the arrangements to be made for the erection of suitable figures on the summits of the propylæa. Mr. Alfred Drury, A.R.A., has been engaged, in collaboration with Mr. F. W. Pomeroy, A.R.A. (Mr. Drury being the contracting artist), to model and cast the panels for the piers of the bridge, and we consider that he should also be engaged to design and provide the figures for the propylæ. He is prepared to provide four subjects, different in design, but in harmony with each other, in a composite material, for a total sum of 2,800*l*. The material, which we are advised is an excellent one, has been used, amongst other works, for the fountains at Versailles, and for work at Hampton Court. We think that Mr. Drury's offer should be accepted, but that Mr. Bertram Pegram, who was originally suggested by the Bridges Committee to collaborate in the work, should be associated with him in the provision of two of the groups. The unexpended balance of the several votes passed by the Council for the construction of the bridge is amply sufficient to cover the cost of the works proposed, and we recommend:—

(*a*) That expenditure on capital account not exceeding 15,400*l*. be sanctioned for the erection of propylæa, with suitable groups of statuary thereon, at both approaches to Vauxhall Bridge. (*b*) That granite propylæa be erected at both approaches to Vauxhall Bridge, in accordance with design No. 1 submitted to the Improvements Committee on March 28, 1906; and that the Committee be authorised to arrange for minor modifications of the design of the structure on the Lambeth abutment, and for the execution of the complete work. (*c*) That the solicitor do prepare and obtain the execution of an agreement with Mr. Alfred Drury, A.R.A., for the modelling and casting, at a total cost of 2,800*l*., of four groups of statuary, to be placed on the propylæa; that Mr. Bertram Pegram be associated with Mr. Drury in the case of two of the groups; and that the seal of the Council be affixed to the agreement (in duplicate)."

Mr. Lewen Sharp moved that the matter be referred back, because he did not think the architect should have his own way entirely in the matter of the design of the propylæa. Quite apart from the question of expense, he also thought that the work should be worthy, not only of the Council, but of the City, and the best art of the present time. He thought that the design of the bridge was satisfactory, but he did not approve of this large expenditure for the purpose of making decorative additions, which, perhaps, might be one day carried out by a private citizen at his own cost. He thought that a group of statuary would be better than these huge pylons.

Sir Melville Beachcroft seconded, and said that he had often remarked that matters of this kind ought to be considered by some Architectural Authority or Committee of Taste, but unfortunately there did not exist such an authority. He could not see any justification for an expenditure of 15,000*l*. on this work. It was supposed that the figures to be erected on the bridge were to be symbolic or decorative, or both, but he was inclined to think that in the course of a year or two they would be neither the one nor the other, but a mere smutty representation of goodness knew what.

Mr. Penn Gaskell contended that these propylæa would be a useless expense, and would utterly destroy the artistic appearance of the bridge.

Mr. Straus, M.P., said he regretted that the name "propylæa" had been substituted for "pylon." Propylæa originally meant an entrance to a sacred place, and he did not think that Vauxhall Bridge could be called a sacred place. He thought it was absurd to suppose that any private individual would come forward and pay for the work proposed, and he reminded the Council that the Alexander III. Bridge, Paris, which was much smaller than Vauxhall Bridge, cost about three times as much.

Mr. A. Smith said he did not think that the Bridges Committee should be responsible for deciding such questions.

The Chairman of the Committee then agreed to take the report back.

*The Aldwych Site.*—Mr. Hubbard, the Chairman of the Improvements Committee, in reply to Sir M. Beachcroft, stated that he was unable to say anything with reference to the progress of the negotiations for the leasing of the Aldwych site to a syndicate at a rental of 55,000*l*. a year, but he hoped next week to make a definite report.

*Cost of Gas Fittings.*—Mr. Cyril Cobb called attention to the fact that during the first four months of the year the Council had spent in the elementary schools 1,333*l*. 8s. 3d. on repairs to gas-fittings, 645*l*. 2s. 8d. in rearranging gas-fittings, 1,222*l*. 17s. 5d. on new gas-fittings, 147*l*. 8s. 5d. on gas-globes, and 669*l*. 8s. 7d. on mantles, a total of 3,018*l*. 5s. 4d. on fittings alone. It would probably astound members to hear that during these four months no fewer than 40,166 mantles had been used in the schools, and he thought the Council was entitled to know whether these mantles were bought on contract or otherwise, and whether any proper means were taken to check the accounts.

Lord Welby replied that the figures were new to him, and he could not give any answer until he had consulted the responsible officials, which he promised to do.

*Public Baths and Washhouses.*—The Education Committee reported, and it was agreed:—

"That the amended drawings submitted to the Education Committee on April 25, 1906, by Mr. James E. Franck on behalf of the Hammersmith Metropolitan Borough Council, of the public baths and washhouses proposed to be erected on the site adjoining the London County Council Hammersmith Technical Institute, be approved, subject to the solicitor advising that such drawings are in legal conformity with the agreement entered into between the Council and the borough council, and subject to the express condition that such approval shall not interfere with the operation of the provisions of the London Building Act."

*Fire Brigade Inspection.*—The following recommendations of the Fire Brigade Committee were agreed to:—

"(*a*) That the resolution of November 8, 1904, approving the proposal to form an inspection department in the fire brigade, and instructing the Fire Brigade Committee to consider and report what arrangements should be made therefor, be rescinded.

(*b*) That, without express instructions from the Council, requests that advice may be given by the fire brigade, with regard to the fire arrangements of buildings other than places licensed for public entertainment, common lodging-houses, and Government buildings, be not acceded to.

(*c*) That the authorised strength of the fire brigade be increased by one district officer and decreased by one station officer, and that an additional clerk be employed at the chief station of the fire brigade, in a temporary capacity, at the rate of pay of 30s. a week."

*Catford Bridge.*—The Improvements Committee recommended, and it was agreed:—

"That, notwithstanding the fact that the estimated net cost of reconstructing the bridge carrying Catford Hill over the South-Eastern and Chatham Railway, should be 57,500*l*. instead of 53,500*l*., the application in the present session of Parliament for authority to reconstruct the bridge be proceeded with on the basis that the Lewisham Metropolitan Borough Council be not required to contribute towards the cost a larger sum than 26,500*l*., and that, in the event of the net cost of the work being less

than 53,500*l*., the difference shall be deducted equally from the respective proportions of the cost to be borne by the Council and the borough council."

The Council, having transacted other business, adjourned.

## APPLICATIONS UNDER THE 1894 BUILDING ACT.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses :—

*Erection of Buildings on the Site of Nos. 247 to 267, Fulham-road.*

*Chelsea.*†—Buildings on the site of Nos. 247 to 267, Fulham-road, Chelsea (Messrs. Elms & Jupp for Mr. R. C. H. Sloane-Stanley).—Consent.

*Lines of Frontage and Projections.*

*Hammersmith.*—Buildings on the southern side of Bulwer-street, Wood-lane, Hammersmith (Messrs. Macintosh & Newman for Mr. E. J. Clayson).—Consent.

*Paddington, South.*—One-story shops in front of Nos. 110 and 112, Westbourne-grove, Paddington (Mr. J. A. L. Gimbletté).—Consent.

*Strand.*—A facia addition to the projecting shelter in front of the Tivoli Music Hall, Strand (Mr. H. Tozer).—Consent.

*Dulwich.*—Bay windows, porches, wooden cornices, and sham half-timber work to ten semi-detached houses on the north side of Burbage-road, Dulwich (Mr. W. Griffiths for Mr. J. Watson).—Consent.

*Greenwich.*—Half-timber work and a projecting porch to a house on the northern side of Liskeard-gardens, Blackheath (Mr. A. M. Torrance for Mr. N. McDougall).—Consent.

*Kensington, South.*—That the application of Messrs. Millard & Pryce, for the Royal Exchange Assurance, for an extension of the period within which the erection of buildings on a site on the south side of Kensington-road, Kensington, to abut also upon Palace-gate, was required to have been completed, be granted.—Agreed.

*Lewisham.*—Additions in front of Nos. 4, 6, 8, and 10, Loampit-vale, Lewisham (Mr. J. Webster for Mr. A. E. Woollett).—Consent.

*Strand.*—A deviation from the plan approved, for the erection of a projecting flue on the eastern side of the Savoy Hotel extension to project in Savoy-buildings, so far as relates to the erection of an additional flue (Messrs. Collcutt & Hamp).—Consent.

*Islington, North.*—That, at the request of the Holloway Press Company, the Council do permit the retention of a showcase on the forecourt of No. 449, Holloway-road.—Consent.

*Norwood.*—A covered way in front of No. 160, Knight's-hill-road, Norwood (Messrs. Hammond & Son for the Colour Type Company, Ltd.).—Refused.

*Lines of Frontage, Projections, and Construction.*

*Finsbury, Central.*—Three external iron gangways, connecting the first, second, and third floor levels of Nos. 9 and 10, Lensden-place, Finsbury, an external iron staircase at the eastern end of No. 8, Lensden-place, and two external iron staircases and landings connecting Nos. 8 and 9, Lensden-place, at the first and second floor levels (Messrs. L. Tubbs & Welch).—Consent.

*Width of Way and Lines of Frontage.*

*Hackney, North.*—Buildings on the site of Nos. 34 to 40 (even numbers), Boleyn-road, Kingsland (Mr. F. J. Staines).—Consent.

*Hackney, South.*—Buildings on the eastern side of Mare-street, Hackney, to abut upon Tudor-road (Messrs. Crossman, Prichard & Co. for Mr. J. King).—Consent.

*Camberwell, North.*—An addition to a factory building on the north-western side of Leipsic-road, Camberwell (Mr. E. J. Strevens for Captain Wood).—Refused.

*Width of Way and Space at Rear.*

*Haggerston.*—Buildings on plots Nos. 8 and 9, Goldsmith's-row, Haggerston, to abut upon Goldsmith's-row, Dove-row, and Hay-street (Messrs. Woodrow & Helsdon for Mr. D. Dear).—Consent.

*Width of Way and Construction.*

*Islington, North.*—Two external iron and concrete balconies at workshop premises on the north-west side of George-street-mews, Holloway (Mr. J. Farrer for Messrs. Foxton Brothers).—Consent.

*Rotherhithe.*—A wood and uralite addition to a saw mill, Rotherhithe-street, Rotherhithe (Messrs. Burt, Boulton, & Haywood, Ltd.).—Consent.

*Width of Way and Temporary Buildings.*

*Rotherhithe.*—Wood and iron buildings of a temporary character at Lower King and Queen Wharf, Rotherhithe-street, Bermondsey (Messrs. J. R. Wood & Co., Ltd.).—Consent.

*City of London.*—The retention of a covered way of a temporary character over a portion of Capel-court, Bartholomew-lane, City (Messrs. Joseph & Smithem for the Alliance Assurance Company).—Consent.

*Formation of Streets.*

*Lewisham.*—That the Council do consent to the application of Messrs. Eastman Brothers for an extension of the period within which a new street for carriage traffic, to lead from Dartmouth-road to Sydenham Hill-road, Lewisham, was required to be clearly defined throughout by posts and rails or so otherwise as the Council might permit and thrown open to the public as a highway.—Consent.

*Lewisham.*—A dwelling-house on the eastern side of an extension of Oaksford-avenue, Wells-road, Sydenham (Mr. W. Wilkinson for Mr. T. Covell).—Consent.

*Dulwich.*—That an order be issued to Messrs. Worsfold & Hayward sanctioning the formation or laying out of a new street for carriage traffic, to lead from Peckham-rye to Dewar-street, Camberwell.—Consent.

*Lewisham.*—That an order be issued to Mr. G. A. Lansdown sanctioning the formation or laying-out of new streets for carriage traffic to lead from Manor-park to Manor-lane, Lee, Lewisham, and in connexion therewith the widening of a portion of Manor-lane (Messrs. W. J. Scudamore & Sons).—Consent.

*Hampstead.*—That an order be issued to Mr. R. J. Worley refusing to sanction the formation or laying-out of a street for carriage traffic to lead out of the eastern side of West End-lane, Hampstead (for the Midland Railway Company).—Refused.

*Space at Rear.*

*Kensington, South.*—A deviation from the plans approved in connexion with the erection of a building known as Thorney Court, Palace-gate, Kensington, so far as relates to an alteration in the position of the building (Messrs. Millard & Pryce).—Consent.

*St. George, Hanover-square.*—A modification of the provisions of sect. 41 with regard to open spaces about buildings, so far as relates to the proposed erection of a building on the southern side of Oxford-street, to abut also upon Davies-street, with an irregular space at the rear (Messrs. W. A. Lewis for Messrs. Perry Brothers).—Consent.

*Kensington, South.*—A modification of the provisions of sect. 41 with regard to open spaces about buildings, so far as relates to the proposed erection of a building to abut upon Silver-street and Edge-street, Kensington, with an irregular open space at the rear (Mr. W. G. Hunt).—Refused.

*Paddington, South.*—Buildings on the eastern side of Richmond-road, Paddington, on the space at the rear of No. 112, Westbourne-grove (Mr. J. A. L. Gimbletté).—Refused.

*Alteration of Buildings.*

*Kensington, South.*—The retention of openings uniting Nos. 4 and 6 to No. 8, Lexham-gardens, Earl's-court (Mr. E. L. Wratten for the Misses Brown and Charles).—Consent.

*Strand.*—The uniting of No. 45, Piccadilly, with a building on the eastern side of Albany-courtyard (Mr. G. D. Martin).—Consent.

*Conversion of Buildings.*

*Lambeth, North.*—The conversion of No. 27, Belvedere-road, Lambeth, into two separate tenements (Mr. P. N. Ginham for the Works Committee of the Council).—Consent.

*The recommendation marked † is contrary to the views of the local authorities.*

## Architectural Societies.

MANCHESTER SOCIETY OF ARCHITECTS.—At the annual general meeting of the members of this Society, held on the 26th ult., the following officers and members of Council were elected :—*President*—Mr. J. H. Woodhouse; *Vice-Presidents*—Messrs. J. W. Beaumont and Edward Hewitt; *Hon. Secretary and Treasurer*—Mr. Paul Ogden; *Assistant Hon. Secretary*—Mr. George Brown; *Members of Council*—(Fellows) Messrs. John Ely, J. B. Gass, W. C. Hardisty, C. H. Heathcote, J. D. Mould, F. P. Oakley, Isaac Taylor, G. H. Willoughby, and P. S. Worthington; (Associates) Messrs. Godfrey Colles, A. E. Corbett, and J. H. Gibbons.

NORTHERN ARCHITECTURAL ASSOCIATION.—The forty-seventh annual Report of this Association records that the total number of members is now 233, as against 220 in the previous year. The Report refers with deep regret to the death of Mr. Francis Edward Caws, who was elected a member in July, 1893, since which time he had held office on the Council as Vice-President, etc., and as President in 1901 and 1902. The Report alludes with regret to the death of Alderman W. H. Dunn, of Gateshead, who had held every office in connexion with the Northern Architectural Association, having been President, Treasurer, and Hon. Secretary, etc.

CARDIFF, SOUTH WALES, AND MONMOUTHSHIRE ARCHITECTS' SOCIETY.—The annual dinner in connexion with the Cardiff, South Wales and Monmouthshire Architects' Society was held on the 27th ult. at the Royal Hotel, Cardiff. The President (Mr. J. H. Phillips) presided, and amongst those present were Principal Griffiths, Messrs. E. Seward, E. J. Williams, David Morgan, Cholton James, C. L. Wilson, H. Teather, E. H. Fawckner, C. H. Priestley, Edgar G. C. Down (Hon. Secretary), etc., the company numbering about forty. The Chairman submitted the loyal toasts, and Mr. E. Seward proposed that of "Our Pastors, Legislators, and Defenders," to which the Rev. J. Baker, Councillor Lewis Morgan, and Capt. E. H. Fawckner responded. The toast of "The Royal Institute of British Architects" was given by Mr. D. Morgan and responded to by Mr. Seward, in the absence of Mr. Dare Bryan, of Bristol. Mr. Seward dwelt upon the need for steps being taken to protect legitimate members of the profession, and for the establishment of a defence fund for architects, subjects which he said were well worthy their attention. Mr. Ernest Runtz (London) proposed the "Cardiff, South Wales, and Monmouthshire Architects' Society," and said such a body was of great service to the Institute in London. Suggestions from the provinces obtained far more attention in London than suggestions from members of the London body itself. He urged them to lay their views before the Institute, and said he was strongly in favour of some measure of legislation if they were to keep their status and improve the condition of building in this country. As regarded Cardiff, he trusted that the local Society of Architects would do their utmost to see that the extension of the city was carried out on artistic lines, and follow the example set in their new town hall, which he had seen and admired. The Chairman replied, remarking that the Society had been in existence about twelve years, and had done really good work. He acknowledged the valuable work done by Mr. Edgar Down on behalf of the Society. Mr. G. H. Birkenhead proposed the toast of the "Master Builders," and Mr. W. Thomas returned thanks, after which Mr. C. James submitted that of "Local Governing and Educational Bodies," and observed that the County Council did not altogether treat architects as they should do. The members of the Corporation had acted in quite a different way, and wisely. It might be well for the Glamorgan County Council to take a lesson from their Corporation. He suggested that the chairman of the Education Committee should convey to the Corporation the advisability of submitting all plans of proposed buildings in Cathays Park to a committee of qualified architects before they were erected. Principal E. H. Griffiths said, in response, that after a study of other university colleges, he thought they would have in Cardiff one of the most perfect university colleges in the kingdom. He could not judge of the artistic exterior, but he said, unhesitatingly, as regarded the internal arrangements, that he would not exchange it for any other that he had seen. Mr. E. J. Williams proposed the last toast of "The Visitors," to which Mr. C. H. Priestley replied.

RURAL BUILDING BY-LAWS.—The Public Health Acts (Amendment) Bill, introduced by Lord Hylton, came before a Committtee of the House of Lords, Lord Balfour of Burleigh presiding, on the 1st inst. The object of the Bill is to amend building by-laws in many particulars in England and Wales, exclusive of the Administrative County of London. Earl Carrington remarked that he had a number of amendments, but with the exception of these the Government had no objection to the Bill. One provision was that "two dwelling houses separated by a party division of fire-resisting material shall be deemed to be a single building," but Earl Carrington asked that the division should be "not less than 9 in. in thickness." Lord Hylton entered a plea for more elasticity in building by-laws, and asked if the words proposed by Lord Carrington were absolutely necessary. Lord Carrington said there had been much discussion about this, especially on the London County Council, but as this Bill was practically confined to rural districts he thought he could properly give way. The amendment was therefore withdrawn, and the Bill was ordered to be reported with amendments.

## THE SURVEYORS' INSTITUTION:

### PROFESSIONAL EXAMINATIONS, 1906.

THE following student candidates have passed the Intermediate Examination:—

*England and Wales.*

A. C. C. Affleck, High Wycombe.
H. J. Amoore, Hanwell, W.
*† W. H. Baines, Bursiem.
C. A. Balcomb, Boscombe.
S. W. Bettridge, Croydon.
A. G. Bird, Kensington, W.
H. S. C. Bishop, London.
W. L. Bosker, Clapham, S.W.
W. A. Bott, Bursiem.
B. Bradley, Worcester.
G. L. Broad, Lewes.
C. G. Brown, Harefield.
H. I. Brown, Tottenham, N.
H. H. Buckmaster, West Hill-road, S.W.
G. S. Callf, West Ealing, W.
W. J. Carlisle, Bayswater.
E. P. Caton, Shefford.
H. Chatley, Holloway-road, N.
F. C. Crimes, Lawton, Kidsgrove.
A. G. Culme-Seymour, Wye.
A. H. Davis, Ladbroke-grove, W.
F. L. Elmes, Canterbury.
C. England, Bournemouth.
H. H. Ewin, Snaresbrook.
A. E. B. Fielding, Cardiff.
R. D. L. Ford, Upper Tooting, S.W.
B. Francis, Southend-on-Sea.
L. F. Gale, Wallingford.
G. H. Garrad, Wye.
H. Gawith, Southport.
R. A. Godwin-Austen, Great Missenden.
L. B. Gumbrell, Kingston-on-Thames.
A. L. Hicks, Egham Hill.
S. G. Hine, Harpenden.
R. E. Hookey, Streatham Common, S.W.
J. H. Howse, Monmouth.
O. G. P. Jack, Highgate, N.
F. F. Kendzior, Purley.
J. L. King, Battersea, S.W.
T. H. R. Lavington, Marlborough.
F. C. Loades, Morpeth.
‡ F. W. Lord, Brodsworth, Doncaster.
C. W. O. Markham, West Hampstead, N.W.
M. R. Martin, Chiswick, W.
C. Milnes, Birkenhead.
H. R. Morris, Aspatria.
H. C. Nutter, Cowden.
O. E. Parratt, Herne Hill, S.E.
B. L. Parry, Poulton-le-Fylde.
D. D. Pearch, Hastings.
F. Peter, Berkeley.
S. A. Ratcliff, Bayswater, W.
G. N. Rawlence, Salisbury.
J. T. Roberts, Ruabon.
W. J. W. Rowland, Bridgwater.
W. Salter, Liverpool-street Station, E.C.
F. Scothorne, Stockwell, S.W.
T. H. G. Stamper, Bookham.
J. F. Tallon, Chester.
R. C. Tharp, Notting Hill, W.
C. B. Tidmarsh, Guildford.
H. E. Tresidder, Falmouth.
W. Walkden, Alderley Edge.
R. C. Ward, Tonbridge.
N. B. Watson, Low Fell.
G. M. Winder, Ottery St. Mary.
G. F. H. Wraight, Tunbridge Wells.

*Ireland.*

C. J. Dunlop, Bray, Co. Wicklow.

The following non-student candidates have also passed the Intermediate Examination:—

*England and Wales.*

A. Abbott, Totnes.
A. Anderson, Wye.
S. H. Anstead, East Ham, E.
H. B. Archer, Sheffield.
S. H. Ashton, North Shields.
A. Askwith, Newcastle-on-Tyne.
C. C. Atkinson, Headingley.
E. G. Bagnall, Ashford.
G. C. Bailey, Clifton.
J. R. Ball, St. Albans.
H. C. Barrett, Harringay, N.
W. T. McN. Barrett, Brixton, S.W.
R. D. Bartlett, Cornwall-gardens, S.W.
A. R. A. Bates, King's Cross, N.
W. M. Bax, Catford, S.E.
E. Bayden, New Cross, S.E.
H. C. Bell, Grantham.
H. J. Benjamin, Maida Vale, W.
O. P. Bevan, Caerleon.
E. Bevington, Stroud Green.
M. A. Binns, Richmond.
C. V. Bisley, Rotherhithe, S.E.
B. F. Blois, Bournemouth.
D. Bloxham, Bude.
C. H. C. Bond, Buckingham Gate, S.W.
H. J. Bonwick, Crouch End, N.
D. Bradford, London.
A. M. Bramall, Highbury New Park, N.
C. B. Brettell, Oxford.
A. E. Bridger, Winchfield.
B. F. Bristow, East Finchley, N.
E. T. Bruce, Wye.
F. C. Buller, Twickenham.
A. H. Bunting, Newton Abbot.
C. S. Burkett-Smith, Notting Hill, W.
R. Butler, Bow, N.E.
W. H. Buttrick, Scunthorpe.
N. P. Campbell, Dublin.
A. J. Cass, Blackheath.
H. M. Chadwick, Rhuddlan.
C. Chamberlain, Wandsworth Common, S.W.
W. N. Chambers, Taunton.
S. Chart, Mitcham.
P. T. Chew, Harrow-on-the-Hill.
H. D. Clark, Patney, Devizes.
H. H. Clough, Rochdale.
B. Cooper, South Woodford.
V. J. Cox, London.
H. M. Crook, Penrith.
C. Cross, North Finchley, N.
P. H. C. Cross, Gosport.
H. I. Cutler, Chiswick, W.
C. W. Davis, Brockley, S.E.
A. C. Dobb, Cirencester.
G. F. Duck, Bromley Common.
G. Dunsmore, Honor Oak Park.
P. L. Dykins, Holywell.
T. J. Edwards, West Bromwich.
F. R. Farrer, London.
C. R. Field, Southwark, S.E.
E. H. Fisher, Market Harborough.
W. A. Foll, West Hampstead, N.W.
R. J. Forge, Twickenham.
T. P. Frank, Leeds.
H. J. Franklin, Wealdstone.
C. W. Giffin, Westminster, S.W.
W. P. Gill, Brighton.
W. S. Goff, Exeter.
J. Y. Grant, Thames Ditton.
J. A. Gray, Hampden Club, N.W.
G. H. Grellier, Bedford.
H. G. Grimwood, Ipswich.
L. R. Hargreaves, Lyndhurst.
P. W. Harrison, Herne Bay.
J. Hart, London.
A. C. Hewitt, Acton, W.
H. C. Hickmott, Longfield Court.
L. M. Holman, Brighton.
W. D. Hooper, Thornton Heath.
D. Hughes, Towyn.
A. Hutchings, Seaford.
E. J. Ingleby, Roundhay.
C. J. Jeffery, Nottingham.
S. S. Jenkinson, Hornchurch.
A. W. Johnson, Harrogate.
W. G. Jones, East Dulwich, S.E.
W. F. Julian, Southsea.
S. A. Kelly, Aintree, Liverpool.
F. P. Kindell, Walthamstow, E.
H. E. Kinton, Fulham, S.W.
R. M. Knight, Brockley, S.E.
J. B. Knowles, Burton-on-Trent.
W. W. Ladd, London.
J. Laird, Marlow.
W. F. Lake, Tulse Hill, S.W.
J. G. Large, Surbiton.
W. Leah, Longlevens, Gloucester.
W. Leaning, Gainsboro'.
J. P. Lee, Hereford.
A. J. Lyddon, Reading.
A. D. McKinstry, Wye.
J. E. G. McSheehy, Wimbledon, S.W.
H. Martin, Redhill.
T. P. V. Maslen, Brondesbury, N.W.
H. T. Merrett, London.
F. B. Moncreiff, Bakewell.
G. Montgomery, London.
J. L. Newton, Oldham.
J. Oldham, Fallowfield, Manchester.
W. V. Packe, West Wickham.
J. H. Pardoe, Hitchin.
H. Paton, Grantham.
F. G. Payne, Denmark Hill, S.E.
A. W. Percival, Plymouth.
F. C. Plumb, Leicester.
H. W. L. Plumstead, Highams Park.
A. E. Popham, Woldingham.
E. de B. Porter, Chesshunt.
O. J. Porter, Tottenham.
W. G. Powell, Woolwich, E.
A. Race, Burrow-in-Furness.
W. E. R. Randall, jun., Chatham.
W. Richards, Shrewsbury.
S. F. Rider, Richmond.
T. R. Ronald, London.
W. S. Rumsby, Bournemouth.
V. A. Rutter, Streatham Hill, S.W.
A. Sasson, Cirencester.
G. T. Searing, Dartford.
H. W. Sefton, Harringay, N.
F. S. Sentance, New Cross, S.E.
W. L. Shelley, Herne Hill, S.E.
J. M. Sheppard, Bedford-square, W.C.
H. R. G. S. Smallman, Cheapside, E.C.
G. Smith, Brighton.
J. E. Smith, Bradford.
H. V. Sorrell, Southend-on-Sea.
H. P. Stagg, Clapham, S.W.
A. A. Stamford, Cambridge.
A. Sunderland, Croydon.
* G. G. Symons, Newport Pagnell.
A. Thomerson, Walthamstow, E.
T. E. Thompson, Jervaulx Abbey, Middleham.
S. E. Tomkins, Brixton Hill, S.W.
A. H. Tucker, Steyning.
H. R. Vaughan, Thornbury.
†H. J. Venning, Brixton, S.W.
E. Walford, Farnham.
P. B. Weeks, Tunbridge Wells.
B. A. Westbrook, Beckenham.
A. R. Whittington, Betchworth.
E. Williams, Brislington, Bristol.
H. C. Wills, Clifton.
F. A. Winder, Sheffield.
I. T. Wright, Birkenhead.
W. H. Yeatman-Biggs, Hartlebury.
M. F. Yorke, Westminster, S.W.
A. F. Young, South Croydon.
D. F. Young, Ilford.
T. Young, Aspatria College.

*Scotland.*

W. A. Ballantine, Lauriston, by Falkirk.
D. Ferguson, Lennox Town.
E. N. Harvie, Mossend.
D. E. Herrald, Leith.
W. Limond, G'enluce.
‡W. R. Young, Falkirk.

*Ireland.*

J. K. Stephenson, Kells, Co. Meath.

The following Professional Associates have passed the Final Examination:—

*England and Wales.*

H. C. Amies, Exeter.
A. L. Armstrong, Harrogate.
P. M. Ashbridge, Wanstead.
G. T. Aylward, Bassett, Southampton.
P. H. A. Bailey, Dudley.
H. J. Barber, Andover.
F. G. Bateman, Ealing, W.
J. G. Bayes, Radlett, R.S.O.
A. H. Bell, Addlestone.
A. W. Bentley, Regent's Park, N.W.
H. F. Berry, Westminster, S.W.
F. E. Blunt, Liverpool.
R. W. Brealey, Leek.
W. Broadbent, Leeds.
H. Brook, London.
H. Burch, Highgate, N.
J. T. Burge, Redland, Bristol.
J. Burn, London.
P. C. Clarke, Richmond.
H. R. Cowley, Southend-on-Sea.
P. B. Dannatt, Blackheath, S.E.
J. N. Davies, Brixton, S.W.
R. W. Davies, Swindon.
S. M. Deacon, Croydon.
R. Dudley, Portland.
F. R. Eiloart, London.
F. C. G. Ellen, Andover.
B. G. Evans, Wandsworth Common, S.W.
E. D. Evans, Wandsworth Common, S.W.
C. H. Eyles, London.
G. W. Ferris, Maida Hill, W.
T. G. Fisher, London.
S. J. Fox, London.
J. Francis, jun., Carmarthen.
W. J. Gallon, Stroud.
E. M. Gilbert-Lodge, Grove Park, W.
H. E. Goodwin, Brockley, S.E.
H. C. Graham, Letchworth, near Hitchin.
W. E. Gray, Canterbury.
E. T. Haslehust, Weybridge.
E. R. Hawkins, Downham Market.
A. L. Hayward, Harlow.
F. J. Henson, London.
J. G. Houghton, Woodford Green.
W. B. Ibbotson, London.
A. H. P. Iverson, London.
G. E. James, London.
J. F. Jones, London.
A. J. Lambert, Dorset-square, N.W.
H. U. Lavarack, Hampstead, N.W.
T. D. Le May, Tonbridge.
R. W. Lines, Tring.
A. H. Llewellyn, London.
J. Luke, Leicester.
H. B. Mackenzie, London.
J. W. McKerrow, Newcastle-on-Tyne.
R. H. J. Mayhew, Anerley, S.E.
A. E. Mirams, Muswell Hill, N.
* S. J. Murrell, London.
P. A. Mytton, Welshpool.
W. W. Newman, Loughborough.
C. C. Oldfield, King's Lynn.
A. Palmer, Nunhead, S.E.
J. O. Payne, Bromley.
W. Plant, Leicester.
A. B. Pritchard, London.
P. C. Raffety, High Wycombe.
F. W. Randell, Swansea.
W. H. Read, Ealing, W.
H. W. Redfern, High Holborn.
G. N. Reeve, Croydon.
B. L. Rice, Willesden Green, N.W.
F. W. Rivers, London.
F. V. Rogers, Bayswater, W.
L. N. Rogers, London.
P. H. Ross, Tufnell Park, N.
H. M. Rushworth, Purley.
H. G. Russell, Sutton.
† H. N. Savill, Broxbourne.
A. Salwey, Broxbourne.
W. G. Shipwright, Catford, S.E.
F. M. Skelt, Leytonstone, E.
A. T. Smith, Bradford.
H. R. Smith, Ipswich.
N. R. Stevens, West Enfield.
C. T. Steward, Westminster, S.W.
C. J. Strachan, Belsize Park, N.W.
A. D. Sturley, London.
T. O. Taylor, London.
E. F. Terry, Surbiton.
E. A. Toley, East Acton, W.
E. P. Turner, Addiscombe.
A. S. Vernon, High Wycombe.
A. A. Vigers, London.
P. J. Waldram, London.
I. Wall, Huddersfield.
W. H. Webber, Bedford-row, W.C.
W. Wheeler, London.
S. D. Whiddington, Crouch End, N.
H. Whitaker, Eye.
A. L. White, Stamford Hill, N.
W. E. C. White, Curridge, near Newbury, Berks.
A. F. Wickenden, Tunbridge Wells.
C. Williams, Wembley.
J. P. Woodhams, London.
E. H. Wright, Plumstead, S.E.
‡H. I. Wykes, Clapham Common, S.W.
H. O. Young, Rock Ferry.

*Ireland.*

C. J. Bourchier, Tullamore, King's Co.
C. A. Markham, Dublin.

The following candidates have passed the Direct Fellowship Examination:—

*England and Wales.*

B. C. Apps, Dartford.
F. W. Hunt, London.
W. D. Jenkins, Carmarthen.
H. de B. Wilmot, Watton.
H. A. Wright, London.

* Penfold Silver Medal. † Institution Prize. ‡ Special Prize.

* Beadel Prize. † Driver Prize. ‡ Scottish Committee Prize.

* Penfold Gold Medal. † Crawter Prize. ‡ Galsworthy Prize.

§ **Such as the "Mechanical World Pocket Diary and Year Book," price 6d.**

## The Student's Column.

### SOME MATHEMATICAL METHODS AND USEFUL DATA FOR ARCHITECTS.—XVII.

DECIMAL LOGARITHM TABLES AND THEIR APPLICATION.

WE now come to the very useful and convenient form of logarithmic tables comprising *four-figure* logarithms and *four-figure* antilogarithms, which are natural numbers corresponding to a given series of logarithms.

Tables of the kind are to be found in several pocket-books and appended to various scientific treatises, but as usually arranged they exhibit the disadvantage that the logarithms extend over two pages and that the antilogarithms extend over two other pages, thus making it necessary for the user to keep turning one leaf of the book backwards and forwards. This drawback constitutes one of those small hindrances that are better avoided if possible, and it is aggravated to a considerable extent when books are used where the two tables extend over eight pages.

In cases such as the latter the loss of time involved in the performance of numerous short calculations becomes a serious item, and it happens occasionally that isolated calculations can be done by ordinary arithmetic in less time than would be occupied by the acts of taking down the book, finding the place, extracting and writing the logarithms, and finding the natural numbers at the end of the calculation.

Waste of time in this way can be avoided by obtaining two copies of any inexpensive book§ in which the tables are printed, and pasting them in convenient form on a piece of cardboard for office use.

We give in Tables XIV. and XV. extracts from complete series of *four-figure* logarithms of numbers from 1 to 9999, and *four-figure*

antilogarithms corresponding to the mantissæ of logarithms from 0·00 to 0·9999.

Table XIV. gives under the column headed "No." the first two figures of various numbers from 100 to 9999; the next figure is given at the top of the first group of columns headed 0 to 9, extending the range to 100 to 999; and the last figure is given at the top of the second group of columns similar headed, extending the range to 100 to 9999.

*Note.*—In what follows we use the abbreviation "*log.*" to denote the *mantissa* of a logarithm, and "complete *log.*" to denote the *mantissa* with the addition of the proper *characteristic*.

*To Find the Logarithm for any Given Number.*

*Rule* (1).—The *log.* of a one-figure number is found in column (0) on the line opposite the given number multiplied by 10.

*Example* (1): *Log.* 8 = 9031;
Complete *log.* = 0·9031.

*Rule* (2).—The *log.* of a two-figure number is similarly found in column (0).

*Example* (2): *Log.* 25 = 3979;
Complete *log.* = 1·3979.

*Rule* (3).—The *log.* of a three-figure number is found in the column of the first group, having at the top the same figure as the third figure of the given number.

*Example* (3): *Log.* 459 = 6618, the *log.* being found in the column (9) of the first group on the line opposite the number 45. Complete *log.* = 2·6618.

*Rule* (4).—The *log.* of a four-figure number is found by taking the logarithm of the first three figures as in Rule (3), then adding the difference stated in the second group of columns for the fourth figure of the given number.

*Example* (4): Find *log.* 3,494.

Here 3494 = 3490 × 0004
*log.* 349 (first col. 9) = 5428
add diff. for 0004 (second col. 4) = 5
5433

Then the complete *log.* = 3·5433.

*Rule* (5).—The *log.* of a number containing more than four figures can be obtained approximately by discarding the excess figures, at the same time adding 1 to the fourth figure if the fifth figure has the value of 5 or more.

*Example* (5): Find *log.* 34,945.

Here 34,945 = 34900 + 00045 (say 0005)
*log.* 3490(0) (1st col. 9) = 5428
add diff. for (000)5 (2nd col. 5) = 6
5434

Then the complete *log.* = 4·5434.

*Rule* (6).—A more accurate method is to calculate the proportional part of the difference as explained in connexion with seven-figure logarithms.

*Example* (6): Find *log.* 34,945.

Here 34,945 = 34900 + 00045,
*log.* 349(00) (1st col. 9) = 5428
*log.* 350(00) (col. 0) = 5441 —
diff. = 13 ×
·45
correction = 585

Therefore,

*log.* 34,945 = 5428 + 000585 = 543385, and the complete *log.* = 4·543385.

*Example* (7): Find *log.* 349,457.

Proceeding as in example (6)—
*log.* 349(000) (1st col. 9) = 5428
*log.* 350(000) (col. 0) = 5441 —
diff. = 13 ×
·457
correction = 5491

Therefore,

*log.* 349,457 = 5428 + 0005941 = 5433941, and the complete *log.* = 5·5433941.

*Note.*—In the following rules and examples we employ the abbreviation *antilog.* to denote antilogarithm, or the significant figures of a natural number corresponding to the *mantissa* of a logarithm.

*To Find the Number Corresponding to any Given Logarithm.*

Table XV. gives a selection of *antilogarithms* corresponding to mantissa from ·000 to ·9999.

This table is used in the same way as Table XIV., and gives *antilogs.* to four figures, which may be correct or slightly incorrect as to the last figure, in accordance with the measure of the fractional inaccuracy of the differences in the second group of columns. Moreover, if the figures in Tables XIV. and XV. are used conversely with regard to identical numbers discrepancies will often appear in the final figure.

*Example* (8): For the *log.* ·7049
Table XV. gives—
*antilog.* ·704 (0) (1st col. 4) = 5058
diff. ·(000) 9 (2nd col. 9) = 11
5069

while by Table XIV. *log.* 5,069 = 7050.

*Example* (9): By Table XIV. *log.* 5587 = 7471, while by Table XV. *antilog.* 7471 = 5586.

It does not follow that the usefulness of *four-figure* logarithms is seriously impaired by slight inaccuracies of the kind mentioned above.

The point may be illustrated by multiplying together the figures of the numbers 5,069 and 5,587 employed in examples (8) and (9), and comparing the result obtained by the use of Tables XIV. and XV. with that given by ordinary multiplication.

*Example* (10): By Table XIV.
*log.* 5,069 = 7050
*log.* 5,587 = 7471
4521

By Table XV.
*antilog.* ·4521 = 2832

The same figures multiplied in the ordinary way give the product

5069
5587
35483
40552
25345
25345
28320503

Now inserting decimal points after the eighth, sixth, fourth, and second figures respectively the same figures give the comparison:—

28320000· and 28320503
283200· and 283205·05
2832· and 2832·0503
28·32 and 28·320503

The two following comparisons have been made by the use of numbers taken haphazard from Table XIV.:—

*Example* (11): Multiply 3·209 by 415·6.
By Table XIV.
*log.* 3209 = 5063
*log.* 4156 = 6186
1249

By Table XV.
*antilog.* ·1249 = 1333
and the complete *log.* = 3·1249 = 1,333.

By multiplication
3·209 × 415·6 = 1,333·6604.

*Example* (12): Multiply 95·43 by 23·48.
By Table XIV.
*log.* 9543 = 9796
*log.* 2348 = 3707
3503

By Table XV.
*antilog.* ·3503 = 2241,
and the complete *log.* = 3·3503 = 2,241.

By multiplication 95·43 × 23·48 = 2240·6964.

Examples (10) to (12) show that the errors caused by the employment of *four-figure* logarithms are too small to affect the substantial accuracy of most calculations performed in connexion with the ordinary practice of an architect or building contractor.

In addition to tables containing logarithms of numbers, those containing logarithms of special character should be mentioned.

(1) *Cologarithms.*—These are simply logarithms of the reciprocals of numbers, their chief use being to permit the process of multiplication to be substituted for that of division, in accordance with the rule that multiplication by the reciprocal of any number gives the same result as division by the number itself.

Cologarithms can be obtained by subtracting the mantissæ of ordinary logarithms from 0, but making the characteristic *negative* for whole numbers and *positive* for fractions.

Thus
Complete *log.* 8,091 = 3·9080
*colog.* 8,091 = (0 − 3·9080) = $\bar{4}$·0920.

The reason for the reversed sign of the characteristic is made still more clear by finding the cologarithm from the reciprocal of the number 8,091.

Thus

$$\frac{1}{8091} = 0{\cdot}0001236$$

*Colog.* = *Log.* 0·0001236 = $\bar{4}$·0920

In a general way the use of cologarithms is not to be recommended, as reference to two sets of tables means some waste of time and the risk that mistakes may be made inadvertently

TABLE XIV.—FOUR-FIGURE LOGARITHMS.

| No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 2 3 | 4 5 6 | 7 8 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | ·000 | 0043 | 0086 | 0128 | 0170 | 0212 | 0253 | 0294 | 0334 | 0374 | 4 8 12 | 17 21 25 | 29 33 37 |
| 11 | 0414 | 0453 | 0492 | 0531 | 0569 | 0607 | 0645 | 0682 | 0719 | 0755 | 4 8 11 | 15 19 23 | 26 30 34 |
| 12 | 0792 | 0828 | 0864 | 0899 | 0934 | 0969 | 1004 | 1038 | 1072 | 1106 | 3 7 10 | 14 17 21 | 24 28 31 |
| 13 | 1139 | 1173 | 1206 | 1239 | 1271 | 1303 | 1335 | 1367 | 1399 | 1430 | 3 6 10 | 13 16 19 | 23 26 29 |
| 14 | 1461 | 1492 | 1523 | 1553 | 1584 | 1614 | 1644 | 1673 | 1703 | 1732 | 3 6 9 | 12 15 18 | 21 24 27 |
| 23 | 3617 | 3636 | 3655 | 3674 | 3692 | 3711 | 3729 | 3747 | 3766 | 3784 | 2 4 6 | 7 9 11 | 13 15 17 |
| 24 | 3802 | 3820 | 3838 | 3856 | 3874 | 3892 | 3909 | 3927 | 3945 | 3962 | 2 4 5 | 7 9 11 | 12 14 16 |
| 25 | 3979 | 3997 | 4014 | 4031 | 4048 | 4065 | 4082 | 4099 | 4116 | 4133 | 2 3 5 | 7 9 10 | 12 14 15 |
| 30 | 4771 | 4786 | 4800 | 4814 | 4829 | 4843 | 4857 | 4871 | 4886 | 4900 | 1 3 4 | 6 7 9 | 10 11 13 |
| 31 | 4914 | 4928 | 4942 | 4955 | 4969 | 4983 | 4997 | 5011 | 5024 | 5038 | 1 3 4 | 6 7 8 | 10 11 12 |
| 32 | 5051 | 5065 | 5079 | 5092 | 5105 | 5119 | 5132 | 5145 | 5159 | 5172 | 1 3 4 | 5 7 8 | 9 11 12 |
| 33 | 5185 | 5198 | 5211 | 5224 | 5237 | 5250 | 5263 | 5276 | 5289 | 5302 | 1 3 4 | 5 6 8 | 9 10 12 |
| 34 | 5315 | 5328 | 5340 | 5353 | 5366 | 5378 | 5391 | 5403 | 5416 | 5428 | 1 3 4 | 5 6 8 | 9 10 11 |
| 35 | 5441 | 5453 | 5465 | 5478 | 5490 | 5502 | 5514 | 5527 | 5539 | 5551 | 1 2 4 | 5 6 7 | 9 10 11 |
| 36 | 5563 | 5575 | 5587 | 5599 | 5611 | 5623 | 5635 | 5647 | 5658 | 5670 | 1 2 4 | 5 6 7 | 8 10 11 |
| 37 | 5682 | 5694 | 5705 | 5717 | 5729 | 5740 | 5752 | 5763 | 5775 | 5786 | 1 2 3 | 5 6 7 | 8 9 10 |
| 40 | 6021 | 6031 | 6042 | 6053 | 6064 | 6075 | 6085 | 6096 | 6107 | 6117 | 1 2 3 | 4 5 6 | 8 9 10 |
| 41 | 6128 | 6138 | 6149 | 6160 | 6170 | 6180 | 6191 | 6201 | 6212 | 6222 | 1 2 3 | 4 5 6 | 7 8 9 |
| 45 | 6532 | 6542 | 6551 | 6561 | 6571 | 6580 | 6590 | 6599 | 6609 | 6618 | 1 2 3 | 4 5 6 | 7 8 9 |
| 50 | 6990 | 6998 | 7007 | 7016 | 7024 | 7033 | 7042 | 7050 | 7059 | 7067 | 1 2 3 | 3 4 5 | 6 7 8 |
| 51 | 7076 | 7084 | 7093 | 7101 | 7110 | 7118 | 7126 | 7135 | 7143 | 7152 | 1 2 3 | 3 4 5 | 6 7 8 |
| 55 | 7404 | 7412 | 7419 | 7427 | 7435 | 7443 | 7451 | 7459 | 7466 | 7474 | 1 2 2 | 3 4 5 | 5 6 7 |
| 56 | 7482 | 7490 | 7497 | 7505 | 7513 | 7520 | 7528 | 7536 | 7543 | 7551 | 1 2 2 | 3 4 5 | 5 6 7 |
| 57 | 7559 | 7566 | 7574 | 7582 | 7589 | 7597 | 7604 | 7612 | 7619 | 7627 | 1 2 2 | 3 4 5 | 5 6 7 |
| 73 | 8633 | 8639 | 8645 | 8651 | 8657 | 8663 | 8669 | 8675 | 8681 | 8686 | 1 1 2 | 2 3 4 | 4 5 5 |
| 74 | 8692 | 8698 | 8704 | 8710 | 8716 | 8722 | 8727 | 8733 | 8739 | 8745 | 1 1 2 | 2 3 4 | 4 5 5 |
| 75 | 8751 | 8756 | 8762 | 8768 | 8774 | 8779 | 8785 | 8791 | 8797 | 8802 | 1 1 2 | 2 3 3 | 4 5 5 |
| 80 | 9031 | 9036 | 9042 | 9047 | 9053 | 9058 | 9063 | 9069 | 9074 | 9079 | 1 1 2 | 2 3 3 | 4 4 5 |
| 81 | 9085 | 9090 | 9096 | 9101 | 9106 | 9112 | 9117 | 9122 | 9128 | 9133 | 1 1 2 | 2 3 3 | 4 4 5 |
| 90 | 9542 | 9547 | 9552 | 9557 | 9562 | 9536 | 9571 | 9576 | 9581 | 9586 | 0 1 1 | 2 2 3 | 3 4 4 |
| 95 | 9777 | 9782 | 9786 | 9791 | 9795 | 9800 | 9805 | 9809 | 9814 | 9818 | 0 1 1 | 2 2 3 | 3 4 4 |
| 96 | 9823 | 9827 | 9832 | 9836 | 9841 | 9845 | 9850 | 9454 | 9859 | 9863 | 0 1 1 | 2 2 3 | 3 4 4 |
| 97 | 9868 | 9872 | 9877 | 9881 | 9886 | 9890 | 9894 | 9899 | 9903 | 9908 | 0 1 1 | 2 2 3 | 3 4 4 |
| 98 | 9912 | 9917 | 9921 | 9926 | 9930 | 9934 | 9939 | 9943 | 9948 | 9952 | 0 1 1 | 2 2 3 | 3 4 4 |
| 99 | 9956 | 9961 | 9965 | 9969 | 9974 | 9978 | 9983 | 9987 | 9991 | 9996 | 0 1 1 | 2 2 3 | 3 3 4 |

TABLE XV.—FOUR-FIGURE ANTILOGARITHMS.

| Log. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ·00 | 1000 | 1002 | 1005 | 1007 | 1009 | 1012 | 1014 | 1016 | 1019 | 1021 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| ·01 | 1023 | 1026 | 1028 | 1030 | 1033 | 1035 | 1038 | 1040 | 1042 | 1045 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| ·02 | 1047 | 1050 | 1052 | 1054 | 1057 | 1059 | 1062 | 1064 | 1067 | 1069 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| ·03 | 1072 | 1074 | 1076 | 1079 | 1081 | 1084 | 1086 | 1089 | 1091 | 1094 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| ·04 | 1096 | 1099 | 1102 | 1104 | 1107 | 1109 | 1112 | 1114 | 1117 | 1119 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| ·12 | 1318 | 1321 | 1324 | 1327 | 1330 | 1334 | 1337 | 1340 | 1343 | 1346 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 |
| ·13 | 1349 | 1352 | 1355 | 1358 | 1361 | 1365 | 1368 | 1371 | 1374 | 1377 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 |
| ·14 | 1380 | 1384 | 1387 | 1390 | 1393 | 1396 | 1400 | 1403 | 1406 | 1409 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 |
| ·35 | 2239 | 2244 | 2249 | 2254 | 2259 | 2265 | 2270 | 2275 | 2280 | 2286 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 |
| ·36 | 2291 | 2296 | 2301 | 2307 | 2312 | 2317 | 2323 | 2328 | 2333 | 2339 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 |
| ·37 | 2344 | 2350 | 2355 | 2360 | 2366 | 2371 | 2377 | 2382 | 2388 | 2393 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 |
| ·45 | 2818 | 2825 | 2831 | 2838 | 2844 | 2851 | 2858 | 2864 | 2871 | 2877 | 1 | 1 | 2 | 3 | 3 | 4 | 5 | 5 | 6 |
| ·50 | 3162 | 3170 | 3177 | 3184 | 3192 | 3199 | 3206 | 3214 | 3221 | 3228 | 1 | 1 | 2 | 3 | 4 | 4 | 5 | 6 | 7 |
| ·51 | 3236 | 3243 | 3251 | 3258 | 3266 | 3273 | 3281 | 3289 | 3296 | 3304 | 1 | 2 | 2 | 3 | 4 | 5 | 5 | 6 | 7 |
| ·52 | 3311 | 3319 | 3327 | 3334 | 3342 | 3350 | 3357 | 3365 | 3373 | 3381 | 1 | 2 | 2 | 3 | 4 | 5 | 5 | 6 | 7 |
| ·53 | 3388 | 3396 | 3404 | 3412 | 3420 | 3428 | 3436 | 3443 | 3451 | 3459 | 1 | 2 | 2 | 3 | 4 | 5 | 5 | 6 | 7 |
| ·54 | 3467 | 3475 | 3483 | 3491 | 3499 | 3508 | 3516 | 3524 | 3532 | 3540 | 1 | 2 | 2 | 3 | 4 | 5 | 5 | 6 | 7 |
| ·55 | 3548 | 3556 | 3565 | 3573 | 3581 | 3589 | 3597 | 3603 | 3614 | 3622 | 1 | 2 | 2 | 3 | 4 | 5 | 5 | 7 | 7 |
| ·60 | 3981 | 3990 | 3999 | 4009 | 4018 | 4027 | 4036 | 4046 | 4055 | 4064 | 1 | 2 | 3 | 4 | 5 | 6 | 6 | 7 | 8 |
| ·61 | 4074 | 4083 | 4093 | 4102 | 4111 | 4121 | 4130 | 4140 | 4150 | 4159 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| ·70 | 5012 | 5023 | 5035 | 5047 | 5058 | 5070 | 5082 | 5093 | 5105 | 5117 | 1 | 2 | 4 | 5 | 6 | 7 | 8 | 9 | 11 |
| ·71 | 5129 | 5140 | 5152 | 5164 | 5176 | 5188 | 5200 | 5212 | 5224 | 5236 | 1 | 2 | 4 | 5 | 6 | 7 | 8 | 10 | 11 |
| ·72 | 5248 | 5260 | 5272 | 5284 | 5297 | 5309 | 5321 | 5333 | 5346 | 5358 | 1 | 2 | 4 | 5 | 6 | 7 | 9 | 10 | 11 |
| ·73 | 5370 | 5383 | 5395 | 5408 | 5420 | 5433 | 5445 | 5458 | 5470 | 5483 | 1 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 |
| ·74 | 5495 | 5508 | 5521 | 5534 | 5546 | 5559 | 5572 | 5585 | 5598 | 5610 | 1 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 12 |
| ·87 | 7413 | 7430 | 7447 | 7464 | 7482 | 7499 | 7516 | 7534 | 7551 | 7568 | 2 | 3 | 5 | 7 | 9 | 10 | 12 | 14 | 16 |
| ·90 | 7943 | 7962 | 7980 | 7998 | 8017 | 8035 | 8054 | 8072 | 8091 | 8110 | 2 | 4 | 6 | 7 | 9 | 11 | 13 | 15 | 17 |
| ·95 | 8913 | 8933 | 8954 | 8974 | 8995 | 9016 | 9036 | 9057 | 9078 | 9099 | 2 | 4 | 6 | 8 | 10 | 12 | 15 | 17 | 19 |
| ·96 | 9120 | 9141 | 9162 | 9183 | 9204 | 9226 | 9247 | 9268 | 9290 | 9311 | 2 | 4 | 6 | 8 | 11 | 13 | 15 | 17 | 19 |
| ·97 | 9333 | 9354 | 9376 | 9397 | 9419 | 9441 | 9462 | 9484 | 9506 | 9528 | 2 | 4 | 7 | 9 | 11 | 13 | 15 | 17 | 20 |
| ·98 | 9550 | 9572 | 9594 | 9616 | 9638 | 9661 | 9683 | 9705 | 9727 | 9750 | 2 | 4 | 7 | 9 | 11 | 13 | 16 | 18 | 20 |
| ·99 | 9772 | 9795 | 9817 | 9840 | 9863 | 9886 | 9908 | 9931 | 9954 | 9977 | 2 | 5 | 7 | 9 | 11 | 14 | 16 | 18 | 20 |

owing to the reversed nature of the rules under which tables of cologarithms are applied.

*Example* (13): Find the value of $\frac{37{\cdot}5 \times 90 \times 36}{3 \times 0{\cdot}024 \times 74}$, using (*a*) ordinary *logs.* throughout, (*b*) ordinary *logs.* for numerator, and *cologs.* for the denominator.

By Table XIV.

| | (*a*) | | (*b*) |
|---|---|---|---|
| *log.* 37·5 | = 1·5740 | | *log.* = 1·5740 |
| 90· | = 1·9542 | | = 1·9542 |
| 36· | = 1·5563 | 5·0845 | = 1·5563 |
| *log.* 3· | 0·4771 | | *colog.* = 1·5229 |
| 0·024 | $\overline{2}$·3802 | | = 1·6198 |
| 74· | 1·8692 | 0·7265 | = $\overline{2}$·1308 |
| | | 4·3580 | 4·3580 |

By Table XV., *anti'log.* ·3580 = 2280, and as *char.* 4 demands five figures in the product the required value = 22·8.

*Gaussian Logarithms.*—These are sometimes termed *addition and subtraction* logarithms, their object being to enable the sum or difference of the logarithms of two numbers to be found when the numbers themselves are not known.

Although the first published table of these logarithms was due to Gauss, of Göttingen, that distinguished mathematician was not the originator of the system which bears his name.

Gaussian logarithms consist of two series, B and C respectively, bearing certain relations to each other and to ordinary logarithms, which we will term Series A.

Thus

$$\text{Series A.} = \log. x$$

$$\text{,, B.} = \log. \left(1 + \frac{1}{x}\right)$$

$$\text{,, C.} = \log. (1 + x)$$

Taking $x = 500$ by way of illustration, we have

$$\text{A.} = \log. 500 \ldots\ldots\ldots\ldots\ldots = 6990$$

$$\text{B.} = \log. \left(1 + \frac{1}{500}\right) = \log. 1{\cdot}002 = 0008$$

$$\text{C.} = \log. (1 + 500) = \log. 501 = 6998$$

As the processes of addition and subtraction applied to ordinary logarithms result in multiplication and division, the convenience of Gaussian logarithms is obvious, but their use is chiefly limited to trigonometrical and actuarial calculations.

*Logarithms of Trigonometrical Functions.*

Numerous tables have been published giving logarithmic sines, tangents, secants, and other angular ratios.

Such tables published in this country have been derived by adding 10 to the logarithms of the natural functions, the object being to void the use of *negative* characteristics.

For instance, the natural *sin.* 0° 1′ = 0·0002909, *log.* 0·0002909 = $\overline{4}$·4637261, and adding 10, we have (10 − 4)·4637261 = 6·4637261.

For the sake of uniformity the same treatment is adopted with respect to all trigonometrical ratios, although it is not necessary for any other reason in the case of functions whose values are always greater than unity.

## THE LONDON BUILDING ACT:

### TRIBUNAL OF APPEAL CASE.

ON Tuesday the Tribunal of Appeal sat at the Surveyors' Institution to hear an appeal by Mr. John W. Watkin, solicitor, on behalf of the South-Eastern and Chatham Railway Company's Managing Committee and others against the certificate of the Superintending Architect of Metropolitan Buildings, dated March 24, 1906, under sects. 22 and 29 of the London Building Act, 1894, defining the general line of buildings on the north-west side of Crystal Palace-parade, Camberwell, between College-road and Farquhar-road. Mr. Frank Mellor appeared for the appellants and Mr. R. P. Mahaffy was for the respondents. Mr. Tagg, Town Clerk, represented the Camberwell Borough Council.

Mr. Mellor, in opening, said he attended for the Managing Railway Committee, the Coal Co-operative Company, and Mr. Stewart, a builder. The Crystal Palace-road was a road between the Crystal Palace and the north-east side of the Crystal Palace High Level Station. The Superintending Architect had defined the general line as being the existing line of the wall of the station itself. The corner where the building was being erected immediately adjoined the exit for the High Level Station, the exit having a covered way to the curb. What the Managing Committee of the railway company contended was that, having regard to sect. 31 of the Act, the laying down of this general line would affect the exercise of their powers. The point was whether or not this particular building was not exempt from the operation of the Act. The railway company was empowered to do what they had done—viz., let a small portion of the corner frontage for a temporary purpose, reserving to themselves the right to resume possession of it if they required it for their own purposes.

Mr. Hudson asked what the company's grievance was.

Mr. Mellor said that the Superintending Architect had given them notice requiring them to remove the building or proceedings would be taken.

Mr. Hudson asked if the position of the appellants was not that of paying no attention to the notice, and then if the architect proceeded the appellants could state their powers.

Mr. Mellor said that was certainly one position they might have taken up, but he submitted that it was more convenient for them to come there, because should the respondents take police-court proceedings then his clients might be prejudiced by having paid no attention to the Superintending Architect's notice. This was a general line laid down entirely on railway property.

Mr. Mahaffy said his contention was that the Tribunal had no right to say whether or not the buildings were exempt. It was a matter for the High Court, and several cases of a similar character had been decided.

Mr. Mellor contended that the Tribunal had special power to deal with such cases, and it could not be said that the appellants were not aggrieved.

Mr. Hudson The question is whether the Superintending Architect has any power to define this general line.

Mr. Mellor: I say he has not.

Mr. Hudson said if that was so then the appeal must be dismissed. If the architect had no power, then he could not hurt the appellants.

Mr. Mellor said he had been served with a notice.

Mr. Hudson said if the architect had no power, then the notice was waste paper

Mr. Gruning asked if the appellants said the line laid down was not the general building line.

Mr. Mellor said his submission was that the general building line should be laid along the retaining wall between the road and the railway company's property.

After consultation Mr. Hudson said that apparently the Tribunal had powers to consider whether or not the line proposed to be fixed would affect the railway company's statutory powers.

Mr. Mellor proceeded to put in Acts of Parliament and plans showing that the land in question was owned by the companies, and it was within their power to pull down the present station wall and build a platform on the land if they cared to. Consequently he contended that it was within the railway companies' power temporarily to let a portion of the land, as had been done in this case, to the Coal Co-operative Society, at one week's notice, for a coal order office.

Mr. Hudson asked if Mr. Mellor wished to decide that the certificate affected the exercise of the powers conferred upon the railway company for railway purposes, and, therefore, was invalid.

Mr. Mellor said if the Tribunal did that he did not want any further building line fixed.

Mr. Lloyd, engineer, was called to prove that the land was not superfluous land.

Mr. Mahaffy said the London County Council submitted that the case raised a legal issue which the Tribunal was not competent to decide, and for them to decide the case was usurping the position of the High Court. On the merits of the case he contended that exemption from the Building Act would only apply to land actually used for railway purposes. It was not to be contended that a railway company could hand over their exemption under the general law to other persons.

Mr. Tagg argued that the appeal was against the defining of the building line, and if the building were used for railway purposes then the line would not apply. Under the agreement with the Coal Co-operative Company the company had to pay the rates and taxes, and it could not be said that it was a building erected for railway purposes.

The Tribunal reserved their decision.

# Illustrations.

## REGENT'S QUADRANT.

THE illustrations in this issue are all portions of what may be regarded as one scheme, from the design of Mr. R. Norman Shaw, R.A., for the rebuilding of the street front of Regent's Quadrant, and for remodelling the site and frontage lines connected with what is at present known as Piccadilly-circus.

The whole scheme is described and commented on in the first article in this issue, to which the reader is referred.

WAR MEMORIAL, CARMARTHEN.—On the 27th ult. Major-General Mackinnon unveiled the monument which has been erected at Carmarthen in memory of the local men who fell in the Boer war. It consists of a massive grey Forest stone base, with sub-base of red Aberdeen granite, the whole being surmounted by a rather more than life-size figure of a British officer in white Sicilian marble. The total height of the monument is about 22 ft. The design was prepared by Messrs. Collier & Jenkins, architects, Carmarthen.

THE T-SQUARE CLUB.—The ladies' concert of the T-Square Club was held on Tuesday last at the Galleries of the Royal Society of British Artists. Among the more noticeable items on the long programme were the recitations by Mr. William Poel and Mr. Richard Temple, the singing of Miss Lois Tanner (a daughter of Mr. Augustus Tanner, the architect), and Mr. Arthur Grover, the violin playing of Mrs. A. H. G. Patey, and the imitations of actors by Mr. Lewis Benet. Among those present were Sir Aston Webb, who presided, and Lady Webb, Mr. and Mrs. Caröe, Mr. Alexander Graham, and other well-known members of the profession.

### COURT OF COMMON COUNCIL.

A MEETING of the City Corporation was held at the Guildhall on Thursday last week, the Lord Mayor presiding.

*Street Improvement.*—The Improvements and Finance Committee reporting on the references as to opening up and improving means of communication in the Parish of St. Bartholomew-the-Great and the immediate neighbourhood, and also as to the desirability of extending such proposed improved means of communication through to Fore-street, stated that, on account of the large cost that would be involved, they were still unable to advise that Parliamentary or any other action should be taken to acquire property for the purpose of such improvements.

*Engineer's Report.*—The same Committee submitted the Engineer's Report on the works executed by the Public Health Department during the year 1905.

*Finsbury-circus Garden.*—It was agreed, on the recommendation of the Streets Committee, to have the outer pathway of this garden relaid with tar paving at an estimated cost of 120*l.*

*Payment of Quantity Surveyors.*—A letter was received from the Honorary Secretary of the Quantity Surveyors' Association, forwarding a copy of a scale of charges for payment of quantity surveyors in connexion with public works which the Council of the Association has issued for the guidance of municipal and other public authorities, and expressing the hope that the Corporation will adopt the scale as a minimum when appointing quantity surveyors. It was referred to the General Purposes Committee.

*New Organ.*—The Music Committee were authorised to give directions for the erection of an organ in the practice-room of the Guildhall School of Music, at a cost not exceeding 1,050*l.* out of the City's cash, such amount to include structural alterations and all other incidental expenses.

*The Central Markets.*—The Central Markets Committee asked for authority to retain the services of Mr. A. T. Walmisley, M.Inst.C.E., to make a thorough examination and full report on the iron and steel work of the structures and substructures of the London Central Markets.—The Court agreed.

## Competitions.

BARNSLEY ELEMENTARY SCHOOL.—In the competition for the elementary school in Dacecommon-road, Barnsley, the assessor, Mr. W. S. Braithwaite, of Leeds, has made his award as follows:—1st premium, 30*l.*, Mr. E. W. Dyson, C.E.; 2nd premium, 20*l.*, Mr. A. Wilby; 3rd premium, 10*l.*, Mr. E. W. Dyson, C.E. The Education Committee have selected Mr. Dyson's design to be carried out.

GREENWICH BRANCH LIBRARY. — The Libraries Committee of Greenwich Borough Council reported, on Monday, the receipt of a communication from Mr. A. W. S. Cross, F.R.I.B.A., the assessor of the designs submitted for the branch library, asking that, on account of the exceptionally large number of designs submitted for adjudication, and of the amount of work devolving upon him, some addition be made to his fee of 50 guineas. The Committee felt bound to admit that the number of designs submitted (172) far exceeded their anticipations. The number on a previous occasion was eleven, and the work falling upon the assessor had therefore been very much greater than had been expected. It was also to be borne in mind that the assessor, in addition to advising the Council as to the several designs meriting the premiums offered, wrote a report criticising each of the 172 designs, and this was highly appreciated, not only by the Committee, but also by the competing architects, many of whom had expressed their appreciation of the manner in which the Council carried out the competition. Further, the assessor advised the Committee as to the site, and upon questions arising in connexion with the proposal to pull down the existing buildings, and as to the most suitable general scheme for the branch library. Altogether, in consideration of the extra services performed by Mr. Cross in connexion with the competition, the Committee had decided (subject to the usual sanction) to offer him 15 guineas in addition to the fee of 50 guineas already paid him.

ALTAR-RAILS, CODFORD ST. PETER, WILTS.—Altar-rails, of English oak, have just been dedicated in Codford St. Peter Church, Wilts, in memory of the late Miss Charlotte Anderson, of that parish. They are of a Jacobean balustrade pattern, and were designed by Mr. H. A. Bernard-Smith, of London.

### BOOKS RECEIVED.

PRACTICAL PAINTER'S WORK. Edited by Paul N. Hasluck. (Cassell & Co.)

CHINESE ART. By Stephen W. Bushell. Vol. II. (H.M. Stationery Office.)

THE NEW GUIDE TO BRISTOL AND CLIFTON. Edited by James Baker, F.R.Hist.S. (J. Baker & Son, Clifton.)

## Correspondence.

### THE DUST PROBLEM—SOME PRACTICAL PROPOSALS.

SIR,—The inconvenience and the dangers which have been endured this Easter as a result of the manner in which our roads are made are only a foretaste of what will be suffered by the general public during the summer months. The well-being of the population, therefore, demands that very immediate and practical steps should be taken to encourage the local authorities to build the main roads of this country of dustless materials.

Unless the State takes some active steps to encourage the local authorities in the construction of dustless roads there is no doubt that very little progress will be made in this matter.

The Roads Improvement Association are approaching the President of the Local Government Board on the question. They have asked Mr. John Burns to receive a deputation which, among other things, will urge:—

(1) That the Local Government Board prepare a return of the steps that have so far been taken by Highway Authorities to construct roads of dustless materials.

(2) That the Engineering Inspectors of the Board investigate these experiments and issue a report for the guidance of Local Authorities dealing with the results so far secured, and giving such guidance as may be possible as to methods of construction, degree of dustlessness secured, durability of materials, and comparative cost.

(3) That the Local Authorities be encouraged to contribute towards the cost of certain experiments with dustless materials about to be made by the Association, and that the Local Government Board appoint a representative to act upon the Committee which has charge of these experiments.

(4) That the Local Government Board represent to the Chancellor of the Exchequer and the Government the desirability of giving effect to the recommendation of the Royal Commission on Local Taxation (Lord Balfour's Commission)—a recommendation subsequently endorsed by the Departmental Committee on Highways appointed by the Board—that a further contribution of One Million sterling should be made annually towards the cost of the maintenance of main roads, and that that grant should be accompanied by conditions calculated to secure efficient maintenance.

(5) That the Board promote legislation empowering County Authorities to fix a minimum width for all trunk roads.

In its attempts to deal with the dust problem on the above practical lines the Association venture to ask for your powerful support.

W. REES JEFFREYS,
Honorary Secretary Roads Improvement Association.

### THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION PAPER ON FERRO-CONCRETE.

SIR,—Two distinct statements were made in the copy of Mr. Bylander's paper which was sent to me.

(1) "It is advisable to use as few bars as possible, in order to simplify the construction."

(2) "The moments on each side of the neutral axis must be equal, and therefore $Rc \times Dc = Rs \times D_s$, and $R_s \times D_s = \frac{M_b}{2}$."

These statements appear to have been either deleted or corrected in the paper as published in the *Builder* of April 21st. I hope you will find space for this explanation of the reason for my remarks, as they appear somewhat unnecessary when read in connexion with the paper as published. CHARLES F. MARSH.

*** We were not able to print more than a *résumé* of Mr. Bylander's paper, and we did not notice Mr. Marsh's allusion to the parts omitted.—ED.

### SAN FRANCISCO BUILDINGS.

SIR,—In my letter of last week, which you so kindly inserted, I aimed at brevity at the expense of being sufficiently explicit.

The "Mint" at San Francisco is a building of some forty or more years of age, and consequently has no iron or steel framework and relies solely upon its walls for stability.

Of course, subsequent accounts proved that other buildings escaped with more or less damage.

JOHN J. ROBSON, M.Inst.C.E.

*** This seems to show that stone-built buildings of a really solid structure may sustain earthquake shock successfully, though the general evidence points to ferro-concrete as the most reliable.—ED.

## General Building News.

CHURCH, ASHTEAD.—The new church of St. George at Ashtead was consecrated by the Bishop of Dorking (Dr. Boutflower) recently. The building has been erected by Messrs. J. Dorey & Co., Ltd., from the plans of Sir Arthur Blomfield & Sons, at a total cost of about 3,413*l.* The church will consist, when completed by the addition of the south aisle and vestries, of a nave 25 ft. wide with accommodation for 228 persons, two aisles each 12 ft. 7½ in. in width, each accommodating about fifty persons, the length of nave and aisles being 60 ft. The chancel is 32 ft. in length, and has an arch on either side, that on the north leading into a transept capable of seating forty persons and that on the south opening into an organ chamber, below which is situated the choir vestry, with the clergy vestry to the east of it. At the west end is provided a baptistry, below which is the heating-chamber, from which the church is warmed by a low-pressure system of hot water executed by Messrs. R. Crittall & Co. The church is built of red brick, both inside and out. At the east end above the altar is a polished green Devonshire marble retable built into the wall and supported on corbels. The roofs are executed in deal and are covered with local hand-made tiles, the bell flèche being covered with oak shingles. The floors generally are laid with pitch-pine blocks, the chancel being laid with Rusts vitreous mosaic to the architects' design. The church is ventilated by iron casements by Messrs. R. E. Pearse & Co., access for fresh air being given by Tobins tubes built into the sills of the aisle windows. The church is lit with gas, the fittings being supplied from the architects' design by Messrs. Hart, Son, Peard, & Co.

PRIMITIVE METHODIST CHURCH, STRETTON.—The foundation-stone of a new Primitive Methodist church was recently laid at Stretton. The building is situated at the north corner of Watling-street and Cross-street, and the total cost will be about 1,300*l.*, and Mr. W. Scott Deakin, of Shrewsbury, is the architect. The materials used are red brick with stone dressings, and red tile roof. The interior will be of pitch pine in the roof and pews, with wood block floor and oak rostrum. Seating accommodation will be provided for about 300. Mr. T. Speke, of Church Stretton, is the builder.

FARNHAM GRAMMAR SCHOOL.—The Archbishop of Canterbury has just opened the new grammar school. The new building is of red brick, with tiled roof, and, with the headmaster's house, which is included, is 160 ft. long and 46 ft. wide. The principal entrance is by an oak door, which opens into a vestibule, from which a hall, with black and white marble tiles, is gained through swing doors. Beyond the cloak-room on the left is an art room. On the other side of the building is a laboratory. The whole of the fittings have been designed by Professor Armstrong, and have been supplied by the Bennett Furnishing Company. On the ground floor there is also a dining-hall, which will enable ninety boys to take their mid-day meal at the school. From the hall a stone staircase, with balusters and panelling of British oak, leads to the upper floor. Leading from this are four classrooms, each with a moveable glass partition, so that they may be thrown into the big school. On the landing is another classroom, which will be used as a boarders' common room, and beyond, over the headmasters' quarters, are two dormitories, accommodating from twenty to twenty-five boys. One will be for junior and the other for senior boys, that for the latter including an assistant master's cubicle. Crowning the roof of the school is a bell turret, with oak columns and copper-covered dome and weather vane. Away from the main building is a manual instruction-room, and adjoining are latrines, etc. The architects were Messrs. Jarvis & Richards, London, architects to the Surrey Education Committee, the contractors being Messrs. Crosby & Co., of Farnham. The total cost, inclusive of site, furnishing, etc., will, we understand, be about 13,000*l.*

Y.M.C.A. BUILDING, LEEDS.—New premises for the Leeds Young Men's Christian Association are being erected at the junction of Albion-place and Albion-street, Leeds, from the designs of Mr. W. H. Thorp. The building will consist of five floors, including the basement. The basement will contain a gymnasium, about 20 ft. high, with the necessary dressing and other rooms. There will also be a still-room and cycle store, as well as showrooms connected with the shops above. The ground floor is to comprise an entrance-hall and lounge, with various staircases, as well as five shops and several offices. The lecture-hall, with gallery equal to accommodating 450 persons, will be on the first floor, and will be available for public meetings, chamber concerts, or other purposes. A reception-room, with buffet, reading-room, lavatories, and offices, will also be on this floor. The second floor will be devoted to the library, meeting, writing, and committee-rooms, and provides access to the gallery of the lecture-hall, whilst on the floor above will be found

classrooms, photographic and work rooms, and the caretaker's apartments.

INSTITUTE FOR THE BLIND, SHEFFIELD.—Mr. S. Roberts, M.P., opened the new West-street premises of the Sheffield Blind Institution on the 20th ult. The original building was erected from plans prepared by Messrs. Gibbs & Flockton about twenty years ago at a cost of about 3,500*l.* Owing to the widening of West-street by the Corporation, 19 ft. of the original building was required, which necessitated the taking down and rebuilding on the new frontage line. The new erection now covers the site enclosed by West-street, Carver-street, West-street-lane, and Holly-lane. The new front is in the Renaissance style, freely treated, the other elevations being carried out to suit the existing building. The contract has been executed by Messrs. Daniel O'Neill & Son, from plans prepared by Mr. Edmund Winder, architect, at a cost of 4,610*l.* The premises consist of two lock-up saleshops, with cellaring, in addition to the Institution, and comprise the following :—Ground floor : Two lock-up saleshops, large retail shop, warehouse, basket-makers' department, good side main entrance, small yard, spacious hall, and stone staircase up to the top of building, also iron emergency staircase. First floor :—Caretaker's house, committee room, dining-room, meeting-room, and workmen's workroom. Second floor : Two large workshops, store warehouse, foremen's office, and store. Third floor : Brush-making department and stores. The buildings are lighted by electric light. The basement consists of large, lofty, and well-lighted cellaring.

LIBRARY, ABERYSTWYTH.—The new buildings, situate in Alfred-place, were opened recently by Mrs. Vaughan Davies. The building was designed by Mr. Walter G. Payton, Birmingham. The ground floor is divided into a reading-room, with papers on stands, the library, reference library, and a private room for the librarian, which can also be used for committee meetings. The buildings have been erected by Messrs. Edwards Bros., with Mr. Savage as clerk of the works.

LIBRARY, WEST BROMWICH.—The foundation-stone of a new public free library, adjoining the existing library premises in High-street, West Bromwich, was laid on the 27th ult. The architect is Mr. S. J. Holliday.

CONVALESCENT HOME, HUNSTANTON.—The Hunstanton Convalescent Home for the accommodation of children, the foundation-stone of which was laid on the 26th ult., faces south and west ; the general design harmonises with the present buildings. The main entrance leads immediately to the centre of the block of the new wards, and a corridor gives direct access to the girls' and boys' sides. Separate staircases are provided near the garden doors. The kitchen and offices are placed centrally, and with top light and ventilation to the former. The architect is Mr. A. P. MacAlister, of Cambridge ; Messrs. G. Clark & Sons, of Cambridge, are the contractors.

SCOTTISH TEMPERANCE LIFE ASSURANCE COMPANY BUILDINGS, BELFAST.—The new building which has been erected by the Scottish Temperance Life Assurance Company, Ltd., at the corner of Donegall-square South and Bedford-street was opened on the 27th ult. The new building is designed in the Scottish Baronial style, and the architect was Mr. Henry Seaver. The outer walls are built of red sandstone from the Ballochmyle quarries, Scotland, and the man piers are of dark green Swedish granite, and the roof is covered with green Welsh slates. At the entrance from Donegall-square South the walls are covered with Italian marble, and the floor inlaid with Roman mosaic. Access to the different floors is obtained by means of two electric hoists, which run side by side. The company will occupy a suite of offices on the ground floor—fitted up with polished teakwood panelling, counters, etc. The staircase is of cut-stone from Robin Hood quarries, Yorkshire. Almost the whole of the top floor has been taken by a group of Masonic lodges. The building has been heated throughout by Messrs. Musgrave, Ltd., on the low-pressure system, with radiators in all the ninety rooms. The electric lighting is taken from the Corporation mains, and the installation was carried out by Messrs. W. Coates & Son, Ltd. Mr. John Woodside, A.M.I.E.E., was the consulting engineer for this portion of the work. All the corridors, which are paved with mosaic, are fireproof, and each suite of offices is provided with a strong room, situated in the round turrets, which are a feature on the main elevation. At the rear a warehouse has been erected. Messrs. James Henry & Son were the contractors for the entire work. Messrs. John Dowling & Son, Queen-street, had charge of the plumbing contract ; the hoists and enclosures were erected by Messrs. A. & P. Steven, Glasgow ; mosaic and terazzo flooring was laid by Messrs. Ebner & Co., London ; the lead lighting was carried out by Messrs. Ward & Partners, Belfast ; Messrs. Shaw & Co. had charge of the wall tiling ; Messrs. Purdy & Millard, Belfast, were contractors for the lining of marble in entrance-hall ; Messrs. Milner & Co., Ltd., built all the fireproof doors ; and Messrs. Henry Hope & Son constructed all the steel window casements.

A CONCRETE DOME.—Stuart's Granolithic Stone Company have just shipped off, in numbered sections, a ferro-concrete dome made for Sir Aston Webb's new Law Courts at Hong-Kong. The dome has a base diameter of 50 ft. and a rise of 37 ft. to the lantern base, thence to the pinnacle of the lantern 19 ft. The stones going to make this dome are prepared in curved segments, having a surface varying from 6 ft. 6 in. by 2 ft. 5 in. to about 18 in. at the top. Their average thickness may be put at 1½ in. They are all rebated and checked at the joints, so as to interlock into each other, and with raised dovetailed flanges. The roll covers are shaped to the detail drawing and are also rebated for interlocking into the raised flanges. Round the dome base is a circular gutter in granolithic. Besides the dome there are the pediment roofs, which were treated in a similar manner, only that the stones or tiles are straight. We had an opportunity of seeing a part of the work before it was shipped ; it makes a very light dome, and the use of ferro-concrete in this manner promises an opportunity of forming a dome with a weather-proof structural exterior which will be independent of the requirement of less durable materials for covering it.

## Sanitary and Engineering News.

SEWERAGE SCHEME, PLYMOUTH.—The Plymouth main drainage scheme is, with the linking up of the first section of the old sewers of the borough with the new system, practically completed. Except the linking up now in progress, the whole of the main drainage work has been carried out under the personal supervision of Mr. H. Victor Prigg, as resident engineer for Messrs. Mansergh. The cost of the whole of the work will not fall far short of 300,000*l.* There were eight contracts. No. 1 contract, which related entirely to the drainage of the Avenue at Laira, was carried out by Mr. Lang, of Liskeard, and No. 2 contract, for the supply of pumps and engines at Laira, was executed by the Campbell Gas Engine Company, Halifax. No. 3 contract, for the outfall at Rusty Anchor, was entrusted to Messrs. Pethick Bros., and No. 4 contract, for the storage tanks at West Hoe, and the main intercepting sewers and its branches, was undertaken by Mr. Abram Kellett, of London. Mr. Lang also undertook No. 5 contract, for the Western low-level district ; Messrs. Shellabear & Sons No. 6 contract, for the storm-water outfall and sewer along the foreshore at West Hoe ; Messrs. Neal, Ltd., No. 7 contract, for the storm sewer at Cattedown, and sections at Laira and St. Jude's ; and Messrs. S. Pearson & Son No. 8 contract, for the reconstruction of the Rusty Anchor outfall. By agreement with the Corporation Messrs. Mansergh have undertaken the supervision and management of the new drainage system for the first two years.

TRANSFORMER STATION, STOKE NEWINGTON.—A new transformer station has been erected by the Stoke Newington Corporation in Church-street. The building was designed by the Borough Surveyor (Mr. W. F. Loveday), and the station equipment was supplied by Messrs. Talbot & Stevenson, and erected under the superintendence of the Borough Electrical Engineer (Mr. S. Hann) and Mr. A. R. Ashmore. The total cost was over 18,000*l.*

BLACKFRIARS BRIDGE.—If the Bill for the widening of Blackfriars Bridge passes into law, it is proposed to enlarge the steps and construct a causeway at the lower side of the bridge on the Surrey side, the steps on the upper side being absorbed in the widening. A letter to this effect from the City Surveyor was before the Thames Conservancy at their meeting on the 30th ult., and the proposals were approved, subject to the condition that the causeway extended to low-water mark, and that the old stairs were not removed until the new ones were opened for use.

## Foreign.

NOTES FROM PARIS.—On the 27th ult. was inaugurated the statue of Benjamin Franklin, presented to Paris by Mr. John Hayes. The sculptor is Mr. J. Boyle, who has represented Franklin seated, on a pedestal designed by an American architect, Mr. Knight, and decorated with bas-reliefs representing the reception of Franklin by Louis XVI., and the signing of the articles of peace between England and the United States.——The Musée des Arts Decoratifs has opened the first of its temporary loan exhibitions. The present one includes various examples of XVIIIth century art lent by M. Doisteau, and the collections of M. Franck and of M. Gosson.——The Ecole des Beaux-Arts will open in a few days a collection of the works of Fantin-Latour. There is also to be opened shortly, at the Georges Petit Gallery, an exhibition of the works of Gustave Moreau.——The "No. 2 Sud" line of the Metropolitan has been opened to the public. It goes to Passy by the Arc de L'Étoile, to the Place d'Italie, and proceeds by the quarters of Grenelle, Necker, Montparnasse and Salpétrière. From Passy it crosses the river on a fine bridge, and at the Rue de Vaugirard enters a tunnel, reappearing on a viaduct as far as the Place d'Italie. Subsequently it will be prolonged, by way of the Gare d'Orleans, as far as the Place de la Nation, crossing the Seine again on a steel bridge. One can then make the complete circuit of Paris for the modest sum of 2½d. first class, and 1½d. second class.

A GREAT HYDRO-ELECTRIC POWER SCHEME FOR INDIA.—An important work which it is proposed to execute in Kashmir, is the establishment of a hydro electric power station on the Jehlam river. The available supply of power is very large, and it is stated that the works will be able to supply current at such prices as to reduce the cost of power to less than one-half that of steam power. Among other directions in which the projectors of the scheme hope to utilise the power generated are : the operation of an electric railway, 200 miles long, to connect Abbotabad and Srinagar ; the provision of motive power for a fleet of large electric dredgers to be used for flood prevention and reclamation works ; the supply of power to textile factories, local tramways, light railways, engineering works, and mines ; and the supply of current for lighting purposes and driving punkahs in the large military cantonments of Northern India. The project is an ambitious one, and if carried out will probably be the largest of its kind in the world.

LABOUR AND HOUSING QUESTIONS IN STOCKHOLM.—Mr. Consul Macgregor, in his annual report, states that according to some recent statistics the number of workmen employed by the city authorities of Stockholm varies from about 2,500 in the winter to 2,900 or 3,000 in the summer. During 1904 the average yearly wages were as follows :—Ground labourers, 58*l.* 10s. ; blasters, 73*l.* 1s. 1d. ; stonecutters, 61*l.* 8s. 10d. ; masons, 73*l.* 31s. 4d. ; carpenters, 66*l.* 15s. 6d. ; bricklayers, 75*l.* 5s. 6d. ; smiths and plumbers, 72*l.* 5s. 6d. Through an agreement made between the city authorities and their workmen, which first came into operation in September, 1905, wages have already risen, and the corresponding figures for the present year (1906) are expected to show a considerable increase. The wages per hour for the town workpeople have ranged from about 4¾d. to 8d., the average being between 5½d. and 6¾d. While the city authorities have been obliged to make allowance for the increased cost of living, private employers of labour have, of course, been obliged to pay still more. Brick carriers, who receive 10¾d. per hour, and masons and carpenters, who earn 11s. 1d. to 16s. 8d. a day, are by no means uncommon, and it is pointed out that if the workpeople have not a comfortable existence it is not the fault of their wages, but of the present enormously high house rents and the ever-increasing prices demanded for the necessaries of life in Stockholm. The rents of labourers' houses in 1903 were for one room and a kitchen from 13*l.* 8s. 6d. to 14*l.* 13s. 4d., and for two rooms and a kitchen 20*l.* 13s. 4d. a year, the houses in question being the property of the city and the tenants the town workmen. Private owners' houses were still dearer. The average rent for one room and a kitchen in Stockholm in 1905 was 16*l.* 0s. 11d. But accommodation for people in general is also very expensive. Flats, of which the city mostly consists, if they are good now come to 16*l.* to 22*l.* a room, and if they are the very best, to 33*l.* a room. In a city of only this size (Stockholm contains at present about 330,000 inhabitants) such rents are very remarkable. It must, however, be admitted that better-class flats here are exceedingly well built, and often beautifully fitted up—double stone stairs (one of them often of marble), parquette floors, and electric lighting being quite common features in them. With such demands for elegance buildings cannot be done economically. The "own home" movement is going on steadily outside the city, but is said to be unfavourably influenced by the new zone tariff.

EXPORTS OF WOOD FROM SWEDEN.—According to the annual report of Mr. Consul MacGregor, at the beginning of the year 1905 hopes were entertained at Stockholm that the prices, which then ruled low, might fall no further, and during the course of the season these hopes were justified, except as regards redwood deals. In their case the demands did not correspond with the supplies, and the third and fourth qualities of 3 in. by 9 in. redwood from the middle of Norrland went as low as 7*l.* 15s. and 6*l.* 15s. respectively. For other kinds of wood an improvement in prices took place at the end of summer or beginning of autumn—a time when prices often show signs of weakness, whereas in 1905 they manifested a tendency to rise. This was chiefly due to orders received from Germany. Even before the shipping season was at an end buyers there paid for

delivery during 1906 10s. more per standard for battens and white and redwood boards, these being the goods most in demand in the German markets. The strong impulse thus given by these buyers soon showed its effects in other quarters. Within a short time importers from various other countries began to send in their orders. At this time Scotch firms bought what they needed for immediate use, whereas other firms in the United Kingdom appeared at first disinclined to pay the prices charged by the Swedish exporters. The approaching season is looked forward to with much hope. According to the report of the Swedish Saw Mill and Wood Exporters' Association the export of deals, battens, and boards, planed and unplaned, from the whole of Sweden was :—

| Year. | Quantity. Standards. |
|---|---|
| 1901 ..... | 903,787 |
| 1902 ..... | 1,004,606 |
| 1903 ..... | 1,039,462 |
| 1904 ..... | 915,390 |
| 1905 ..... | 973,076 |

THE REBUILDING OF BALTIMORE.—Mr. Fraser, British Consul, reporting on the trade, commerce, and navigation of the States of Maryland, Virginia, West Virginia, and Kentucky for the year 1905 makes the following observations :—Too great praise cannot be given to the people of Baltimore for the energy they have shown in the rebuilding of the city after the great conflagration of February 7, 8, and 9, 1904. It was estimated that the loss of property on that occasion amounted to 25,000,000*l.*, and in the past twenty-two months the former buildings have been replaced to a great extent by some of a more substantial character, with a great improvement architecturally. Advantage has been taken to widen and straighten the streets in the burnt portion of the city, but much has yet to be done in laying down the roadways, which are in some cases in bad condition. This will no doubt soon be done, as it is intended to spend about 1,000,000*l.* (5,000,000 dol.) for paving purposes. It is observed that most of the bank buildings and those of other financial institutions have not been replaced by the high structures they formerly had, but by buildings of from two to three stories, as the experience of the fire proved that the latter were not so liable to destruction. Ferro-concrete, or concrete reinforced with steel, has entered largely into the erection of buildings in Baltimore, with, it seems, considerable satisfaction. The concrete used is usually composed of one part best quality Portland cement, two and a half parts clean sharp sand, and five parts ¾-in. stone, either granite or trap rock. The walls of a building are made by packing the concrete in wooden boxes while the material is in a plastic state. In these boxes have been placed vertical and horizontal pieces of steel, and when the cement hardens the walls become very strong ; the same general method is used in the construction of floors, ceilings, roofs, etc., and it is claimed that as the metal is perfectly embedded in the concrete it is absolutely protected from atmospheric action and against intense heat. An interesting test of its strength was made a few weeks ago in a building in course of construction. A weight of 25,400 lb. was placed on 84 sq. ft. of the second floor and on a slab of concrete 4½ in. thick, the slab being supported on a beam 6 in. by 8 in. This weight was allowed to remain for twenty-four hours, and after it had been removed the beam only showed a deflection of ⅛ in. The cleaning of buildings of the effects of the fire by the use of sand blown on to them by strong air pressure has been used to a considerable extent, and it certainly has been very efficacious. It is said, however, that it has the effect of opening the face of the material treated and makes it more liable to the reception of deposits of smoke, etc., and also to decay. Perhaps it may be said that the fire was "a blessing in disguise," for it has certainly stirred up the authorities to making some very much-needed improvements, such as the construction of sewers at a cost of 2,000,000*l.* (10,000,000 dol.).

## Miscellaneous.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Mr. W. Duncan Tucker, timber merchant and horticultural builder (Tottenham), has formed his business into a private limited liability company, in conjunction with his two sons. The style of the firm in future will be "Wm. Duncan Tucker & Sons, Ltd.," the management remaining the same as before.

INTERNATIONAL ASSOCIATION FOR TESTING MATERIALS.—This Association, which holds its congresses about every three years in industrial centres in various countries, will meet this year in the Academy of Science at Brussels, from September 3 to 8. The programme of excursions includes visits to the Harbour Works at Brussels and at Antwerp, the Steel Works of the John Cockerill Company at Seraing, the Arsenal at Mechlin, and the Harbour Works at Zeebruge. Among the papers to be read will be one on the "Industries of Belgium," by Baron E. de Laveleye and M. Camerman. It is expected that a considerable number of members and delegates from this country will be present at the Congress. Mr. J. E. Stead, F.R.S., Middlesbrough, is the English Secretary of this Institution.

THE NEW COUNTY HALL.—A Select Committee of the House of Commons, under the presidency of Mr. Billson, have considered the London County Buildings Bill. This is the measure promoted by the London County Council for the purpose of obtaining power to acquire a site in Lambeth fronting the Thames on the down-stream side of Westminster Bridge, and erect on it a county hall and offices. Only two opponents—the Lambeth Borough Council and Messrs. Holloway Brothers—appeared before the Committee. The Hon. J. D. Fitzgerald, K.C., with whom was Mr. Vesey Knox, opened the case for the London County Council. He said the present county hall and offices were inherited from the Metropolitan Board of Works, and were wholly inadequate. As the business of the Council kept increasing fresh buildings had to be acquired. The staff of the Superintending Architect was spread over seven buildings, and the staff of the Controller was in three buildings. Obviously that was an intolerable position. It was productive of delay, considerable inconvenience, and increased cost. Several sites had been considered, and the present one had the advantage of providing the largest area at the smallest cost. The site was close to the Houses of Parliament and the public offices, and was easily accessible from all parts of London. Including the amount of foreshore which was to be taken for the purpose of forming an embankment in front of the new buildings, the area of the site was five and four-fifths acres. At present the officials of the London County Council numbered 1,909. The Committee approved the bill.

FIRE TESTS WITH STEEL SHUTTERS.—Messrs. Arthur L. Gibson & Co. write that they do not think our paragraph (page 473) on the tests of their shutters by the British Fire Prevention Committee conveys a correct impression. Our remarks were entirely based on the Official Report of the Committee, but we did not mention that the single shutter had been classed as "Fully Protective—Class A" and the double shutter as "Fully Protective—Class B" because the statement was not included in the published Report ; it would be better if the classification made by the Committee were included in these cases. Into several other points mentioned by Messrs. Gibson we have not space to go, but we fully recognise that their single shutter is a better protection than most other single doors ; only our conclusion from the Report is that a double shutter is much preferable, and that the single one is only a partial protective.

COMPANY OF PLUMBERS.—At the meeting of the Quarterly Court of the Plumbers' Company at the Guildhall last week it was reported that steps were being taken in Leeds to obtain statutory powers in strengthening the position of the authorities in regard to the registration of plumbers. In a report on the same subject from Hull, Mr. Gilbert Whyatt, Borough Engineer, Grimsby, referred to the King's Speech, promising that something should be done to codify and extend the Public Health Acts, and stated that a local authority had no powers to make by-laws for plumbing work in a house, and a plumber might put in almost anything he pleased, so far as by-laws were concerned. In a report from Birmingham, Mr. E. Antony Lees, Secretary of the Birmingham Water Department, stated that the movement for the national registration of plumbers was started in Birmingham in 1890. The initiatory stage had been passed by allowing sufficient time for those practising the trade to become registered. The public now recognised the importance of the movement from a sanitary point of view, and the registration of plumbers should be taken up by the new Government. In a report from Norwich, remarks by the Mayor supported this opinion, and reference was made to plumbing work being undertaken by such firms as Whiteley's and Harrod's Stores, and others, emphasising the necessity for apprenticeship and training of the men who had actually to execute the work.

INCORPORATED CHURCH BUILDING SOCIETY.—This Society held its usual monthly meeting on Thursday, the 26th ult., at 7, Dean's-yard, Westminster, the Rev. Canon C. F. Norman in the chair. Grants of money were made in aid of the following objects, viz. :—Building new churches at Hasbury, S. Margaret, near Halesowen, Worcs., 150*l.* ; Miskin, S. Barnabus, near Llantrisant, Glam., 100*l.* ; Thornham, S. John, near Manchester, 100*l.* for the first portion, and Forest Gate, S. Edmund, Essex, 25*l.*, making in all 275*l.* ; and towards enlarging or otherwise improving the accommodation in the churches at Buncton, All Saints, Sussex, 15*l.* ; Dauntsey, S. James, near Chippenham, 25*l.* ; Ivychurch, S. George, near Folkestone, 75*l.* ; Upleadon, S. Mary, Glos., 15*l.* ; Llantwit Major, S. Illtyd, near Cardiff, 25*l.*, making in all 75*l.*, and Wakefield, S. John, 75*l.* in lieu of a former grant of 60*l.* A grant was also made from the special Mission Buildings Fund towards building the Mission Church of S. Paul, Camelsdale, near Haslemere, Sussex, 20*l.* The following grants were also paid for works completed :—Alwalton, S. Andrew, near Peterborough, 20*l.* ; Stonebridge, S. Michael and All Angels, Middlesex, 70*l.* ; Hilton, S. Mary Magdalen, Hants., 15*l.*, on account of a grant of 25*l.* ; Field Dalling, S. Andrew, near Holt, Norfolk, 10*l.* on account of a grant of 30*l.*, and Barnes, S. Mary, Surrey, 75*l.* on account of a grant of 100*l.* In addition to this, the sum of 560*l.* was paid towards the repairs of thirty-eight churches from Trust Funds held by the Society. The Annual General Court of the Society will be held at the Church House, Dean's-yard, Westminster, on Thursday, May 17, at 3 p.m., when the chair will be taken by the Archbishop of Canterbury, President of the Society.

COMMITTEE OF INDUSTRIAL EDUCATION.—The Committee appointed by the recent Conference at the Guildhall met at the House of Commons on the 26th ult., Dr. T. J. Macnamara, M.P., in the chair. Reports on education and apprenticeship in the plumbing trade by Mr. F. Barter, and apprenticeship in the printing machine managers' trade, by Mr. W. H. Howes, also on apprenticeship in New Zealand were discussed. The Committee also considered information on the co-operation of employers in the technical training of apprentices, furnished by Mr. A. S. Biggart, of Glasgow. Dr. Crawford gave particulars of the conduct of trade classes at the Glasgow and West of Scotland Technical College under committees of management, consisting of the employers and workmen, and the governors of the college, and the system of grants made by the Scotch Education Department. Sir Henry Hibbert, Chairman of the Lancashire Education Committee, stated that similar arrangements for the conduct of trade classes in Lancashire had been adopted with extremely successful results, and the authorities carried with them the full support and co-operation of the masters and men in the trades concerned. He urged the necessity for more systematic apprenticeship. Sir Horace Plunkett said that the Department of Agriculture and Technical Instruction for Ireland were endeavouring to arrange for the more harmonious co-operaton of the trade unions, the employers, and the technical instruction authorities. Communications regarding apprenticeship were received from the trade unions of carpenters and joiners, boiler-makers and iron and steel ship-builders, operative house and ship decorators, boot and shoe operatives, and the Scottish Typographical Association.

QUINTIN HOGG MEMORIAL.—The Works Committee of the Marylebone Borough Council have agreed to allot a site in Langham-place for the proposed memorial of the late Mr. Quintin Hogg, who, after the closing of the Polytechnic (1831-81) as a place of scientific entertainment, took over the buildings for a young men's Christian Institute. The statue will be sculptured by Mr. G. J. Frampton, R.A.

WHITECHAPEL ART GALLERY.—Under the presidency of Earl Carrington and his co-adjutors Canon Barnett, Mr. Medd, and Mr. W. M. Webb (of the Selborne Society) a novel kind of instructive exhibition will be held in Whitechapel Art Gallery in the course of July. One section of the exhibits will exemplify building materials and appliances ; another section will comprise models to show the planting of streets and open spaces, as well as of children's playgrounds and gardens, railway embankments, town and suburban gardens, and so on. It is also intended to exhibit plans for the improvement of some areas in London, to illustrate domestic life in foreign cities, and to show specimens of plants that might still be cultivated in London, together with vivaria, aquaria, and bee-hives.

ENDCLIFFE HALL, SHEFFIELD.—At the invitation of Mr. C. B. Flockton (of Messrs. Gibbs & Flockton, architects) a meeting was held a few days ago in Cutlers' Hall of those who are interested in the preservation of Endcliffe Hall and what is left of the grounds. Since the death of Sir John Brown, who erected the Hall in 1863-5, the property, upon which he expended 100,000*l.*, was bought by a local syndicate for entertainments, receptions, etc., but as the venture did not prosper they decided to dispose of the estate for building purposes, and a large portion of the land has already shared that fate. As Chairman of the meeting, Mr. S. J. Robinson, Master Cutler, stated that the existing property, 5 acres, could be purchased for 10,000*l.*, and that it had been proposed to convert it into a country club. Mr. Flockton said the place could be improved at a small outlay and that the income, now about 785*l.* per annum, could be greatly increased. The meeting passed a resolution in favour of the purchase and nominated a committee for the formation of a small limited company in that behalf. We may add that the land which has been sold, with the exception of the portion which faces Endcliffe Woods, realised 2,000*l.* per acre, whilst the portion facing the

Woods realised 1,500*l.*; in 1885-96 the Corporation bought an aggregate of 73 acres of Endcliffe Woods and the adjoining property for a total sum of 19,000*l.* as a place of public recreation and resort, and they have since enlarged the pleasure grounds with a further plot of 6 acres at Whiteley Woods.

GOVERNMENT CONTRACTS.—In the Parliamentary Papers Mr. Keir Hardie asks the Secretary to the Treasury whether there are any granite or macadam contracts with Messrs. Mowlem & Co., contractors, and if so, whether the fair wages clause is in force in the granite quarries of the firm at Guernsey from which the material is obtained.—In reply, Mr. M'Kenna states that the Government have contracts with the firm. In the case of granite paving and macadam the fair wages resolution is attached to the contract. In the case of granite macadam ordered for the roads in the royal parks in and around London the fair wages clause has not hitherto been attached, but arrangements will be made for this to be done in the future. Messrs. Mowlem pay the current rate of wages for the district in their quarries in Guernsey.

ARBITRATION CASE.—The arbitrator's award has just been received in the dispute, recently heard at Plymouth, between Mr. Henry Kerswill, contractor, of Plymouth, and the Secretary of State for War, in reference to the building of barracks and recreation block for the Royal Artillery at Plymouth Citadel. Mr. Kerswill's case was that he had been made to do a quantity of work not set out in the quantities or the plans, and other work, which, it was contended, might be said to be in the quantities, but was not fairly or properly and adequately described therein. The claim amounted to about 9,000*l.* Mr. Kerswill's tender was for 22,844*l.* Mr. A. R. Stenning, sitting as arbitrator; Mr. H. Holman Gregory and Mr. R. B. Murphy (instructed by Watts, Ward, & Anthony) were for claimant, and Mr. S. A. T. Rowlatt and Mr. Micklethwaite represented the Secretary of State for War. The case was heard at Plymouth on March 1 and 2, and subsequently adjourned to London. The arbitrator awards Mr. Kerswill 3,017*l.* 4s. 8d., and directs each party to pay his own costs of the petition of right, reference, and arbitration, and that the War Office pay the arbitrator's costs of the award, amounting to 219*l.* 3s.

MANCHESTER BUILDING TRADES EXHIBITION.—A building trades exhibition was opened recently in the St. James's Hall, Manchester. The exhibition has attracted a large number of exhibitors, with the result that the goods displayed are greatly varied. A central stall is occupied by the Manchester School of Technology, with a display of materials used in connexion with sanitation and a selection of drawings from the engineering, surveying, sanitary inspection, and plumbers' work sections. In the gallery is a selection of architectural drawings. Mr. J. H. Woodhouse, President of the Manchester Society of Architects, took the chair at the opening of the exhibition, and Alderman Sir James Hoy performed the formal opening ceremony. The exhibition closes on May 5.

MEMORIAL CROSS, SOUTH CROYDON.—A memorial cross has just been erected in St. Peter's churchyard, South Croydon, to the memory of the late Rev. John White. It takes the form of an old style Runic cross, 7 ft. in height, standing on a massive die and base, with bevelled kerbing surrounding the grave. The whole is in red Cheshire stone, and the design and execution are the work of Messrs. G. Maile & Son, of London.

MEMORIAL TABLET, WINCHESTER CATHEDRAL.—Dr. Warre recently unveiled in Winchester Cathedral a memorial tablet to the late Canon Huntingford, D.C.L. The tablet was designed by Mr. C. E. Kempe to fit into the stone panelling, being executed in simple characters upon a groundwork of gilded copper and green marble.

MINERALS OF SOUTHERN NIGERIA.—There have just been presented to both Houses of Parliament reports on the mineral survey of Southern Nigeria for 1903-4 and 1904-5 by Professor Wyndham Dunstan, F.R.S., Director of the Imperial Institute, who states, *inter alia*, that limestone of excellent quality for the manufacture of mortar and cement has been discovered, a matter of the greatest importance to the Protectorate, especially as some of the limestone occurs in the river banks, and could, therefore, be readily transported. Between Awi and Odukpani sedimentary rocks were met with, as on the Kwa and Akpa Iyefe rivers. They consisted of sandstones, shales, and limestones, but the limestones which appeared to be available for burning for lime were only a few feet in thickness. Limestones suitable for burning and for building stones were found in the neighbourhood of Ekoi quarry, near Vwet. The limestone was not very satisfactory, but sandstone suitable for building purposes was met with, and on the opposite side of the river an excellent face of granite was uncovered. The minerals collected included limestones containing fossils. The results of the analyses showed that several produce excellent lime, suitable for building purposes.

CHEAP HOUSES NEAR SHEFFIELD.—Dr. Alexander Anderson, medical officer of health for Wortley Rural District Council, commenting on the housing question in his annual report, points to cottages erected just outside the Sheffield boundary as an illustration of the best class of cottage of a cheap type. These houses were sold for 150*l.* They are built in blocks of four, the front walls being of stone with ashlar dressings, and the other walls of brick. They face a street 36 ft. in width, and the distance from the back of the house to the outer wall of the plot is 35 ft., there being an open space at the rear free of building of about 500 sq. ft. Each block has a central passage, 3 ft. 6 in. wide, for access to the rear, and built over so as to afford larger bedrooms to the houses adjacent. In the basement is a cellar for coal and provisions, on the ground floor are two rooms each 12 ft. square, on the first floor are two bedrooms, and above them an attic bedroom. There is a waste water closet, but no bath. The space at the rear is occupied with a small garden, and the paths and footways are asphalted. All have gas and water laid on. They let at 5s. 9d. per week, free of rates, the probable average net rent being 4s. 6d. Other houses, built in similar style, but provided with bath (hot and cold water) and scullery, have been sold for 178*l.*

HOUSEHOLD FIRE PRECAUTIONS.—Under this title a most useful sheet has been published by Messrs. Unwin Bros., consisting of suggestions for guarding against fire in private houses, and for the immediate proceedings to be taken if a fire breaks out, drawn up by Captain Shean, consulting fire-brigade engineer. The sheet is sold at 6d., and if studied and acted on, it will be a sixpence very well laid out.

BESSEMER MEMORIAL FUND.—The Memorial Committee, of which Sir Wm. H. Preece and Sir J. Wolfe Barry are the Chairman and Vice-Chairman, have framed their scheme which had been postponed pending the final report of the departmental committee to inquire into the working of the Royal College of Science and the Royal School of Mines. They recommend that the Sir Henry Bessemer memorial fund should be applied to (1) the endowment of open international scholarships for post-graduate practical work, to be of such value and to be awarded "under such conditions that they will be regarded by students of any nation as a prize worth striving for, and as an incentive to the highest scientific attainment," and, with the exception of those allocated to certain approved British institutions, to be tenable in any part of the Empire, in the United States, and in Europe; (2) the equipment of mining and metallurgical memorial laboratories in the Royal School of Mines at South Kensington as the centre of the memorial, the land and cost of the new buildings and maintenance of the school being provided from Government and other sources: and (3) the erection of a statue of Bessemer in the new Royal School of Mines, S.W.

TRANSVAAL MAGNESITE CEMENT.—About two years ago an extensive deposit of magnesite was opened out in the Transval, at a point between Kaapmuiden and Malelane stations on the Johannesburg Delagoa Bay Railway, and about 90 miles distant from Delagoa Bay. The deposits are located in a range of hills which run parallel with the main railway line, and the area covered by the formation is roughly about 8 miles long by 1½ miles wide. As a rule the magnesite exists in aggregated veins of varied thickness, in many places being more than 100 ft. in width; but the central hills near Salt Creek appear to be one vast deposit of about 2,000 ft. long by 200 ft. wide, and upwards of 300 ft. high. At this particular point it is estimated that the deposit of magnesite exceeds 1,000,000 tons. The magnesite is equal to the best quality obtained in Greece; it is pure white, and breaks with a conchoidal fracture. It is hard and fine grained, resembling unglazed porcelain in texture, and is unusually pure, being fractionally free from lime, alumine, and iron, while the proportion of silica is almost a minimum. The nature of the deposit is such that the whole of the hills can be quarried at a very low cost, and the necessary fuel for calcination is readily obtainable.

## Capital and Labour.

RULES FOR THE PLASTERING TRADE.—We are glad to be able to state that a new code of working rules has been agreed upon between the London Master Builders' Association and the London District of the National Association of Operative Plasterers. We are informed that the rules will be printed and circulated in the course of a few days.

BUILDING TRADE CONCILIATION.—The scheme for closer union between master builders and operatives in England, which had its origin in the Yorkshire Federation of Master Builders, has now become an accomplished fact. It is a scheme having as its primary object the avoidance of disputes and lock-outs, and the bringing about of a better feeling between master and operative. The parties to the agreement are the National Association of Master Builders (with which is federated, through the Yorkshire Association, the Bradford Master Builders' Association), the Amalgamated Society, the General Union, and the Associated Societies of Carpenters and Joiners, the London and Manchester Societies of Bricklayers, and the National Society of Stone Masons. In whatever district the masters and the operatives have an association a local Conciliation Board is to be formed with a view to settling any trouble or misunderstanding that may arise from time to time, and in case of the parties not being able to come to an amicable settlement the matter in dispute is to be brought before the Northern Centre Board, and if necessary the National Board. The pleasing feature of the arrangement is that work in the meantime is going on. The first meeting of the Bradford Conciliation Board, which consists of six representatives on each side, took place recently at the Building Trades and Stone Exchange, Bradford, when the following officers were appointed for the coming year:—Mr. T. E. Taylor, Chairman; Mr. W. C. Hardacre, Vice-Chairman; and Mr. Albert Hammond and Mr. J. H. Hopkinson, Joint Secretaries.—*Yorkshire Observer.*

## Legal.

### THE ACTON ANCIENT LIGHT DISPUTE.

THE hearing of the case of Kine *v.* Jolly commenced in the House of Lords before the Lord Chancellor and Lords James of Hereford, Robertson, and Atkinson, on the 3rd inst., on the defendant's appeal from the judgment of the Court of Appeal from a decision of Mr. Justice Kekewich in the Chancery Division.

(The case was reported in the issue of the *Builder* of July 23 and 30, August 6, December 17 and 24, 1904.)

The action was brought by the plaintiff, Mrs. Sarah Kine, the owner of a house and premises known as "Woodthorpe," Acacia-road, Acton, against the defendant, Dr. Jolly, the owner of neighbouring premises, for a mandatory injunction, and alternatively of damages in respect of the alleged obstruction of the ancient lights of the plaintiff. It appeared that the ground floor of the plaintiff's house, which was built about twenty-two years ago, had on the west side two windows, lighting respectively the drawing-room and a smaller sitting-room, and a door with glass panels, and a window or fanlight over it lighting the entrance-hall. The defendant began to build his house about the latter part of 1902. The plaintiff alleged that in spite of remonstrances made on her behalf, the defendant had erected a high building so near to the said windows, glazed panels, and fanlight, as to materially obstruct the light entering the said dwelling-house, and so interfere with her use and enjoyment of the premises. The case had been twice before Mr. Justice Kekewich. On the first occasion he granted the plaintiff a mandatory injunction, which was before the division of the House of Lords in the Colls case. On appeal from that decision of his lordship to the Court of Appeal it was admitted on behalf of the plaintiff that the judgment could not stand as it was, and by consent the lord judge's order was discharged, and the case sent back to him for re-trial. The re-trial took place before the lord judge in July, 1904, and on August 2 he delivered a considered judgment. He then came to the conclusion that although there had been interference by the defendant's building with the light of the plaintiff's drawing-room, he could not, in accordance with the rule laid down by the House of Lords in the Colls case, deem the obstruction of light to that room to be actionable. He also held that taken alone there had been no actionable obstruction of the light coming to the plaintiff's hall by reason of the defendant's building. The great cause of complaint was as to the obstruction of light to what had been called the morning-room in the plaintiff's house, and with regard to that he came to the conclusion that the obstruction of light to that room was a nuisance within the meaning of the authorities on the subject. His lordship thought that he must treat the obstruction as to the morning-room plus the obstruction of light to the hall, and he granted a mandatory injunction ordering the defendant to pull down so much of his house as caused a nuisance to the plaintiff by the obstruction of the light to the windows of the morning-room and the hall, as the same existed previous to the erection of the defendant's house. His lordship also directed that the defendant should pay the costs of the action. From this decision the defendant appealed to the Court of Appeal, when Lords Justices Vaughan Williams and Cozens-Hardy held that applying the principle laid down by the House of Lords in the Colls case to the findings of fact of Mr. Justice Kekewich there was a good cause of action by the plaintiff. They differed, however, from Mr. Justice Kekewich in thinking that the remedy ought to be damages and not a mandatory injunction. Lord Justice Romer, however, dissented, being of opinion

that by applying the law to the facts as found by Mr. Justice Kekewich, the plaintiff had failed to prove that the defendant had committed a nuisance. By a majority of the court, therefore, the judgment of Mr. Justice Kekewich was varied by the order for a mandatory injunction being discharged and an inquiry as to damages being directed—hence the present appeal.

Mr. Hughes, K.C., and Mr. Vernon appeared for the appellant, and Mr. P. Ogden Lawrence, K.C., and Mr. Cann for the respondent.

The arguments of counsel were proceeding when we went to press.

## NEWCASTLE ANCIENT LIGHT CASE.

IN the Court of Appeal, composed of the Lord Chief Justice and Lords Justices Vaughan Williams and Stirling, on the 1st inst., the hearing was resumed of the case of Cowper and Steel, Coulson, & Co., Ltd., *v.* Milburn and others on the plaintiffs' appeal from the judgment of Mr. Justice Buckley in the Chancery Division. There was also a cross appeal by the defendants from that part of his lordship's judgment refusing the defendants an inquiry as to damages. (The case was reported in the *Builder* of June 18, 1904, and March 25, 1905.)

In this case Cowper, the freeholder, and the plaintiff company, the lessees of Dean Inn, No. 20, Dean-street, Newcastle-on-Tyne, brought the action against the defendants for an injunction to restrain them, their servants and agents, from continuing the erection of certain buildings so as to cause a nuisance or obstruction to the plaintiffs' ancient lights as the same were enjoyed previous to the removal of the buildings formerly standing on the site of the defendants' premises. Until comparatively recently on the west side of Dean-street there were certain buildings of moderate height, and they had been acquired by the defendants and pulled down, and on the site the defendants had erected buildings far exceeding the height of the old buildings. The defence was a denial of liability, and in the result Mr. Justice Buckley held that there had been no nuisance on the part of the defendants and dismissed the action with costs. From this decision the plaintiffs appealed. At the conclusion of the arguments of counsel on March 21, 1905, the Lord Chief Justice said he was of opinion that there must be a report made by someone who would report to the Court whether there had been an obstruction of the light, assuming the old windows in the plaintiffs' building were still there, and when that had been received the Court would give judgment on the appeal.

Mr. Ralph Neville, K.C., Mr. Astbury, K.C., and Mr. Maughan appeared for the appellants (the plaintiffs); and Mr. Warmington, K.C., Mr. Buckmaster, K.C., and Mr. O'Leigh Clare for the respondents (the defendants).

At the sitting of the Court Mr. Astbury said he had seen a copy of Mr. Chadwyck Healey's report on the matter, and, having regard to what appeared in that report, he had nothing further to say on behalf of the plaintiffs.

The Lord Chief Justice, in giving judgment on the plaintiffs' appeal, said that as the finding of Mr. Chadwyck Healey was to the effect that, even taking the plaintiffs' lights as they existed before 1897, the defendants' building would not have obstructed those lights, having regard to the use and occupation of the premises and the character of the neighbourhood, he (the Lord Chief Justice) was of opinion that Mr. Justice Buckley had proceeded on a right basis. The consequence was that the appeal would be dismissed and the action dismissed with costs.

The Lords Justices concurred.

Mr. Warmington then proceeded to open the cross appeal of the defendants. He said that during the course of the proceedings the plaintiffs had applied for an interim injunction, and on January 11, 1904, an order was made, whereby upon the plaintiffs giving the usual undertaking in damages the defendants undertook until judgment not to further build so as to interfere with the plaintiffs' lights. Early in May, 1904, the Colls case was decided in the House of Lords, and on May 3 the plaintiffs applied to Mr. Justice Buckley to be relieved of their undertaking in damages. The interim injunction stood from January 11, 1904, to May 3, 1904. On June 14 the action was tried before Mr. Justice Buckley, and when his lordship gave judgment for the defendant he was asked but refused to grant the usual inquiry as to damages. He (counsel) now asked their lordships to say that there should be the usual inquiry as to damages.

Mr. Astbury, on behalf of the plaintiffs, asked their lordships not to disturb the order of the learned judge. He said the action was set down for trial on February 18, and the case was in the paper ready for trial early in March. On March 12 Mr. Justice Buckley intimated that he would rather not try the case until the House of Lords had delivered judgment in the Colls case. Both sides agreed to that. The moment judgment was given in the Colls case plaintiffs applied to vary the undertaking as to damages so that it should not be said that they had given a wider undertaking than was justified by reason of the Colls case. He asked their lordships to affirm the discretion Mr. Justice Buckley had exercised in the matter.

In the result their lordships held that there must be an inquiry as to damages, and therefore allowed the cross appeal.

## NUISANCE FROM SEWAGE WORKS:
### ALLEGED STATUTORY PROTECTION UNDER THE PUBLIC HEALTH ACT.

THE hearing of the case of the Attorney-General *v.* the Dorchester Corporation was commenced in the Court of Appeal, composed of the Master of the Rolls and Lords Justices Romer and Cozens-Hardy, on the 24th ult., on the appeal of the defendants from a judgment of Mr. Justice Kekewich in the Chancery Division.

This was an action by the Attorney-General at the relation of Mr. R. R. Talbot and by Mr. Talbot against the defendant Corporation, in which the Attorney-General claimed an injunction to restrain the defendants from so maintaining and carrying on certain sewage works as to cause a public nuisance, and from conveying or permitting to be conveyed, untreated or improperly treated sewage from the works into the river Frome in alleged contravention of sect. 17 of the Public Health Act, 1875. The plaintiff, Mr. Talbot, also claimed an injunction to restrain the defendants from carrying on the works so as to cause a private nuisance to him as owner and occupier of property in close proximity to the works, and damages.

The short facts of the case were as follows:—The works in question were constructed on a site containing 19½ acres of land, of which 3 acres were within the borough boundaries and the remainder was outside the borough. The 3 acres were acquired by the Corporation for the purpose of sewage disposal works in 1884 under a provisional order made under the Public Health Act, 1875, and duly confirmed, giving the Corporation compulsory powers for the acquisition of the land. The works contemplated when the 3 acres were acquired were never carried out, but in 1899 the Corporation decided upon the construction of sewage disposal works upon a site consisting of the 3 acres in question and 7 acres of adjoining land outside the borough boundaries, the latter being part of the 19½ acres forming the site of the works ultimately constructed and complained of in the present action. The Corporation acquired the 7 acres without obtaining compulsory powers. The works upon which the Corporation determined in 1899 were to be for the treatment of the sewage on the International system. The Corporation applied to the Local Government Board for their sanction to the raising of a loan for the purposes of the works, and on December 7, 1899, the Board issued an order allowing the construction of the works described in the notice given by the defendants, but subject to the following modification, viz.:—That the works should be in accordance with a plan sealed with the official seal of the Local Government Board, and marked "Dorchester Sewerage Plan Showing Works Outside Municipal Boundary," and which had been deposited in the office of the Local Government Board, a duplicate of such plan, sealed and marked, being deposited at the office of the Town Council of the Borough of Dorchester. The Board, on December 30, 1899, gave their sanction to the raising of loans to the amount of 17,000*l.* by the Corporation for the purposes of the proposed works. In 1900 the borough boundaries were extended by a provisional order made by the Local Government Board under the Local Government Act, 1888, and the order was duly confirmed and came into operation on November 9, 1900. The added area did not include any portion of the site of the sewage works. In 1901 the Corporation resolved to abandon the International system of treatment of the sewage and to adopt the bacterial or septic system, and requested the Local Government Board to hold a local inquiry on the matter. On December 4, 1901, the Local Government Board, by letter, approved of the proposed alteration in the system of sewage disposal, subject, however, to the Town Council acquiring such an additional area of land as was necessary to provide an area of not less than 10 acres for the irrigation of the effluent, and they decided to comply with the application for sanction to a loan of 3,000*l.* The Corporation then applied to the Local Government Board for a provisional order giving them compulsory powers to acquire additional land for the works, and on April 10, 1902, the provisional order was made and subsequently confirmed. Some time prior to May 6, 1902, the Corporation applied to the Local Government Board for their sanction to the raising of a further loan of 7,500*l.* for the purposes of the sewage disposal works. The Local Government Board, after an inquiry, allowed the construction of the works described in the notice, subject to the following modification, viz.:—"The portion of the land coloured green on the plan which lies to the north of the line marked A B C on the plan shall, by excavation or otherwise, be so lowered or prepared that the surface of such portion shall not in any part thereof be at a greater elevation than the height of 173·00 ft. above ordnance datum. The plan referred to is a plan which has been sealed with the official seal of the Local Government Board and marked 'Borough of Dorchester Sewage Disposal Works,' and which has been deposited in the office of the Local Government Board, a duplicate of such plan, sealed and marked in like manner, being deposited in the office of the Town Council of the Borough of Dorchester." Shortly after this order, which was made on September 15, 1902, the Board sanctioned the raising of the proposed loan of 7,500*l.* On February 25, 1903, a local inquiry was held into an application by the Corporation for sanction to a further loan of 2,550*l.*, of which 1,500*l.* was required for the purchase of the additional 9½ acres under the provisional order of 1902, and the rest for the purchase of certain other land to the west of the works through which the outfall sewer was to be carried, and these loans were sanctioned in March and June, 1903, and the works were opened in March, 1904. In the main, the works constructed were in accordance with the plan and specifications which were before the Board when the letter of December 4, 1901, was written and the order of September, 1902, was issued, but certain modifications and alterations had been made afterwards. Before the defendants' sewage works were constructed the sewage of the borough had been discharged in a crude state into the river Frome at a point a little higher up the river than the point of discharge of the outfall sewer in question. Mr. Talbot's house and ground at the nearest point was about 500 ft. from the centre of the sprinklers distributing the sewage over the secondary filter beds. The plaintiff alleged that there had been negligence on the defendants' part, both in the construction of the works and in the method of working them. Mr. Justice Kekewich held that the existence of a nuisance had been proved, and that such nuisance was due to the sewage brought by the defendants to their works. He found, however, on the evidence, that there was no proof that the defendants had been guilty of negligence, he being satisfied that the defendants had done their best to construct the works according to competent advice, and, having constructed them, to make them operate efficiently so far as circumstances permitted. His lordship, on the question of nuisance, granted declarations in the language of the claim for injunctions and injunctions in like terms, and directed a reference for the purpose of assessing the damages (if any) Mr. Talbot had suffered. With regard to the claim under sect. 17 of the Public Health Act, 1875, he made a declaration to the effect that the defendants had conveyed sewage and filthy water into the river Frome, but as regarded that he declined to grant an injunction, being satisfied that the effluent was now open to no objection on that ground. His lordship further ordered the defendants to pay the costs of the action, and suspended the operations of the injunctions and the inquiry as to damages pending the present appeal.

Mr. Danckwerts, K.C., Mr. Stewart Smith, K.C., and Mr. C. H. Sargant appeared for the appellants; and Mr. P. Ogden Lawrence, K.C., Mr. Macmorran, K.C., and Mr. Longstaffe for the respondents.

Mr. Danckwerts, on behalf of the appellants, said the appeal mainly turned upon a point of law. Mr. Justice Kekewich had found, in effect, that there had been no negligence in the construction of the works or in the user of them after construction. He had even gone further, and said he was satisfied that the Corporation had done everything that could be suggested to keep the beds as free from objection as possible. Defendants' case was that the nuisance which had occurred was inevitable from such works as these, and the effect of it was that, having regard to the local extension order, people must put up with the result. Where the Legislature authorised a local authority to do a particular thing, and the authority by doing that particular thing did cause mischief, the authority, being guilty of no negligence in exercising the power given them by the Legislature, no action, he submitted, would lie against them, either by an individual or by the Crown through the Attorney-General.

In the result, their lordships affirmed the decision of Mr. Justice Kekewich, holding that the defendants could not plead immunity from an action for nuisance.

The appeal was accordingly dismissed with costs.

## TARMAC ROAD PAVING:
### PROCEEDINGS AGAINST THE BRIGHTON CORPORATION.

THE hearing of the case of the King *v.* the Mayor and Corporation of Brighton concluded in a Divisional Court of King's Bench, consisting of the Lord Chief Justice and Justices Ridley and Darling on the 30th ult. In this case the defendants appeared to show cause why a writ of *certiorari* should not issue to remove into the Court orders or resolutions made by the Council of the borough in July and August, 1905, whereby it was ordered that the treasurer of the borough

should pay to the Public Works Committee two sums of 2,500*l.* and 500*l.* upon the grounds that the expenditure was unnecessary and illegal, and that the Corporation had no jurisdiction to make such orders.

Sir Robt. Finlay, K.C., Mr. J. Eldon Bankes, K.C., and Mr. E. E. Humphreys appeared for the Corporation to show cause against the rule; Mr. Montague Lush, K.C., Mr. Ernest Pollock, K.C., and Mr. Casson appeared in support of the rule; while Mr. Dunkels represented the Public Works Committee.

Sir R. Finlay, in opening the case, said he appeared to show cause against a rule *nisi* for a writ of *certiorari* granted to quash orders on the Borough Treasurer, one for 2,500*l.* and the other for 500*l.*, for certain tarmac works on the Madeira-road at Brighton. The Corporation were said to be acting *ultra vires* in laying this road with tarmac for the purpose of motor competition speed trials. The fact, however, was that the laying of this road with tarmac was, as he should show upon the affidavit, a most excellent way of paving the road. It was perfectly true that the immediate occasion of adopting this form of road paving was that an automobile competition was in view, but it was also the fact that the question of paving this road with tarmac had been brought before the Corporation many years before; that it was an excellent and economical way of paving the road; and that in adopting this process the Corporation were acting strictly within their powers as the highway authority.

The learned counsel then read an affidavit made by Mr. F. T. Wilson, Chairman of the Works Committee, who stated that the object of the Committee in paving the road with tarmac was to produce the best possible surface for motor speed trials and to effect a lasting improvement to the Madeira-road for the benefit of all classes of persons and of all descriptions of traffic using the road. In his opinion the carriage traffic on the road was greater than when the new paving was laid, and there had been a very marked increase in the pedestrian traffic, while the continuation of the footpath on the south side, which was included in the contract, had proved a great attraction. The almost entire absence of dust and mud and the rapidity with which the surface dried after rain caused the road to be especially agreeable to invalids.

The Lord Chief Justice said he supposed there was nothing illegal in a Corporation encouraging motor trials on their roads.

Sir R. Finlay said there was not, and that the trials were very beneficial to the town.

The Lord Chief Justice: Tar macadam in order to stop dust is being tried everywhere.

Sir R. Finlay: Yes, and such a roadway is of enormous advantage. There is no dust and it is much more healthy.

The learned counsel then read an affidavit by Mr. May, the former Borough Surveyor of Brighton, in which he said that as far back as 1897 he made a report to the Works Committee, recommending the experiment of laying Madeira-road with tar macadam.

The Lord Chief Justice said he thought that when the rule was asked for it was suggested that the tarmac was put down solely to get the automobile meeting.

Mr. Lush said that that was so, and would be proved.

Sir R. Finlay said it was impossible to come to that conclusion. If it had not been done *bonâ fide* the Mayor and Corporation would have to pay the cost. He then read an affidavit by Mr. Weller, the present Borough Surveyor, to the effect that as against the first cost of laying the tarmac road there must be set off the saving in the cost of repairs and watering, due to its substitution for ordinary macadam. He estimated the cost of necessary repairs to the tarmac at 50 per cent. less than to ordinary macadam roads. Further, the tarmac road did not require watering, and he estimated the saving in that respect at 84*l.* per annum.

After further affidavits had been read, the Lord Chief Justice said he thought it would be extremely difficult for the Corporation to justify expending money on a public highway simply to have motor trials.

Mr. Justice Darling: During which it could not be used as a highway.

Sir R. Finlay said that the tarmac road would be there and last ten or fourteen years, with all the advantages related in the affidavits. He submitted that if this was a form of paving elected *bonâ fide* in the exercise of their discretion as the highway authority, it did not matter that the immediate occasion which called their attention to the desirability of laying it was this proposed automobile competition. He contended it was established that the Corporation acted perfectly *bonâ fide* and well within their powers.

Mr. Dunkels, on behalf of the Public Works Committee, adopted the argument of Sir R. Finlay.

Mr. Lush, in support of the rule, submitted that the Corporation had not expended this money acting within their powers at all, but in excess of their powers. That Court, he submitted, sat as a Court of Appeal against any wasteful expenditure in such a case; indeed, the only way of surcharging a Corporation was by coming to that Court. His two contentions were, first, that the Corporation had in fact exceeded their powers, and, secondly, if they had not exceeded their powers there had been a wasteful expenditure, and the Court had power to consider if that was so, and to quash the orders for payment if they found it was. What had been done here by the Corporation was not in the exercise of their powers as a Corporation, but as an Urban Authority under the Public Health Act. The Act protected a Corporation from being interfered with by auditors, but left it to the Court to say whether it was wasteful or not. It was clear that the Court had the right to over-rule wasteful expenditure. The case was of supreme importance, because if the contention of the Corporation was sound there was no power in any auditor or tribunal to prevent the most wasteful extravagance on the roads. The Corporation were only authorised to repair the roads as occasion might require, and they must show reasonable ground for saying the occasion required the spending of money for the repair of the road. The Corporation had to show that the time had come when the road needed repair, and they did not pretend that was so, even in their own affidavits.

At the conclusion of the arguments of counsel the Lord Chief Justice, in giving judgment, said the case was one of great importance because the Court was asked to quash an order for the payment of a considerable sum of money. Speaking for himself, if there had been evidence to show that the Corporation were acting *bonâ fide* under their statutory powers, he thought the case of "Westminster Corporation *v.* the London and North-Western Railway" showed that their expenditure ought not to be reviewed, although there might be cases where the expenditure was so unreasonable as to be *ultra vires*. It was not disputed that the section under which the Corporation purported to act was sect. 149 of the Public Health Act, 1875, which empowered the authority to alter and repair streets "as occasion might require." He was of opinion that the beginning and end of the matter was the desire of the Automobile Club to hold their meeting at Brighton and the desire of the Corporation that the meeting should be held there. He came to the conclusion that the Corporation desired to have the automobile trials at Brighton, and that that desire was the only motive which prompted them to make the expenditure complained of. The fact that the motion for a rule was not made until December was not sufficient to enable the Court to say that the order ought not to be quashed.

Justices Ridley and Darling concurred, and the rule was accordingly made absolute.

# Patents of the Week.

APPLICATIONS PUBLISHED.*

172A of 1905.—A. BRUCE: *Siphon Cisterns.*

This relates to a siphon cistern, and is characterised by a siphon having an inner tube and an outer tube, the inner tube having a lateral branch provided with a valve which can be operated by the pull cord, and the outer tube having at its upper end an air inlet valve which is opened automatically by means of a float and lever arrangement connected to the valve spindle, said valve having preferably a pipe connexion, which is led out at the roof or elsewhere.

6,848 of 1905.—W. JAMIESON: *Machines for Clamping together Pieces of Wood or other Material.*

This relates to a machine for clamping wood or other material, and consists in the arrangement of a presser bar worked by a crank and connecting rod through a lever having a fixed or immovable fulcrum, and the work of which is measured by the strength of a spring to which it is attached.

6,953 of 1905.—F. S. FILDES and E. S. FILDES: *Geysers or Apparatus for Rapidly Heating Water.*

This relates to a geyser or water heater comprising inner and outer sheet metal cylinders, plain, corrugated, or indented, concentric with each other, and producing a narrow or annular space between them, a plate closing in the upper end of the inner tube within the said depending tube forming a flue, a conical and cylindrical baffle, hollow or solid, suspended below and around the lower ends of the tube and flue, and with or without water-way connexions, and means for conveying the water into and out of the geyser.

10,719 of 1905.—A. FULLARTON: *A Machine for Moulding Artificial Stone or Concrete Blocks or Slabs.*

This relates to a machine for moulding artificial stone or concrete blocks or slabs, consisting of the moulding-box, provided with hopper and rear opening for the introduction of the concrete matter and means for forcing it into the moulding-box aforesaid, a hinged cover lid designed to be raised at will in order to introduce a coating of coloured material or the like, lowered or locked in position by clamping devices, a movable bottom capable of being raised by the intervention of rotatable screws or by means of a piston and rod actuated by steam hydraulic or other means.

11,996 of 1905.—H. MACFARLANE: *A Method of Manufacturing Sheet Steel or Iron in Imitation of Earthenware Tiles or Bricks.*

This relates to a method of manufacturing enamelled sheet steel or iron in imitation of earthenware tiles or bricks. The metal sheets are first grooved or marked so as to represent tiles or bricks, and this grooving or marking is accomplished by means of suitable dies, stamps, rolls, or the like. After the plates have been suitably grooved or marked they are then cleaned and enamelled in the usual manner.

14,508 of 1905.—M. J. ADAMS: *Baths.*

This consists in forming a bath with a slope in such a way that a satisfactory wash can be got with very little water, because one end will be comparatively deep, and this end the bather will use. There is also formed a lavatory support upon the bath, discharging the waste of the same by the bath waste, and, where desired, one set of taps is caused to feed the bath and lavatory, and in some cases the water passes through the lavatory itself to the bath.

14,603 of 1905.—G. B. SMITH, JUNR.: *Transit Sheds and Like Covered Structures.*

This relates to a transit shed having its roof formed in telescopic sections, which may be rolled or slid one within another to uncover part of the shed, and having fitted in conjunction therewith an overhead Goliath or other crane or cranes for removing goods through the opening or openings formed in the roof.

18,537 of 1905.—J. BRETHERTON: *Bricks, Blocks, and Tiles for Buildings.*

This relates to bricks, blocks, and building tiles of glass, constructed in such a manner that when they are laid or put together in the ordinary process of building construction all the mortared or cemented joints between the bricks are entirely covered by suitably shaped interlocking or engaging ledges or projections and recesses formed on the face surface of each of the bricks. The above-mentioned interlocking or engaging parts are so constructed as to come into contact with each other when the main or body portions of the bricks are separated by the mortar or other binding cement, consequently all the mortar or cement joints between the bricks are covered, and water or rain is prevented from soaking into and penetrating the mortar or cement, and in consequence pointing or repointing of the joints between the bricks is entirely done away with and rendered unnecessary.

22,737 of 1905.—C. TIMME: *Flooring Slab for Laying Directly on Masonry.*

This relates to a flooring slab for direct application to masonry by means of mortar or other adhesive material, consisting of an artificial stone mass with wooden facing and an intermediate isolating layer provided between the wooden and stone layers, held together in the usual manner by elastic connecting medium, of an isolating mass, which is compressed between the layers and remains elastic and soft even on the upper surfaces, and follows all movements of the wood due to contraction or warping, and therefore presses tightly everywhere against the wood.

675 of 1906.—W. MANLEY: *Lavatory Basins, Baths, and the like.*

This relates to lavatory basins, baths, and the like, and consists in providing a lavatory basin superposed above the bath at the foot and mounted in a frame fitted upon the edge of the bath. The basin is provided with a supply of hot and cold water, which may be conveniently admitted through a geyser, or it may be admitted through hot and cold taps provided upon the basin. The outlet from the basin, when the basin is used, may be closed by a plug, the waste water from the basin flows through the trap, the tap under the basin being turned off or shut; while, when the bath is required, the water flows through the basin by taking out the plug and turning on the tap. It will be understood that when the bath is required the water flows through the tap underneath the basin, thus filling the bath.

1,111 of 1906.—L. PIRSOUL: *Manufacture of Tiles and the like.*

This relates to a method of manufacturing glass tiles or the like with attachment projections, and consists in forming the tile or the like in a suitable mould and introducing into the still plastic or fluid mass in the mould a die provided with recesses, for the purpose of producing corresponding projections in the back of the mass when solidified, if desired deforming or undercutting said projections and finally filling up the back with sand or other material.

PATENTS.—*Continued on page 506.*

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

# List of Competitions, Contracts, etc.

**For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, iv; Contracts, iv. vi. viii. x.; Public Appointments, xix.; Auction Sales, xxxii.**

**Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.**

## Competitions.

* JULY 2.—LIVERPOOL SCHOOL.—The Liverpool Education Committee invite plans and designs from architects for new secondary school for girls at Aigburth Vale. Applications for conditions of competition (with particulars of premiums offered, etc.) should be made to the Town Clerk, Municipal Offices, Liverpool, with deposit of 1*l.* 1s. Plans to be submitted not later than July 2.

NO DATE.—AYSGARTH.—VILLAGE INSTITUTE.—Village institute at Aysgarth, Wensleydale. Plans are invited from architects, for a village institute, to cost not more than 500*l.* Particulars from Mr. F. S. Graham, Aysgarth.

## Contracts.

### BUILDING.

MAY 7.—BANBRIDGE.—DISPENSARY.—Banbridge Guardians invite tenders for the erection of a dispensary and dispensary residence for the use of the medical officer of the Crossgar Dispensary District, in the townland of Crossgar, according to the plans and specifications prepared by Mr. W. W. Larmor, architect. Sealed tenders, addressed "To the Presiding Chairman," on the special form obtainable from office of Mr. Edward Wyly, Union Clerk, Poor Law Office, Workhouse, Banbridge, Ireland, and containing the names and addresses of two solvent sureties, will be received up to 12 o'clock noon on May 7.

MAY 7.—CROOKES.—KITCHENS, ETC.—Erection of eight kitchens and bedrooms at property, 1 to 15, Carson-road, Crookes. Plans and specifications at Mr. F. W. Stephenson's, Draper, Snig-hill. Tenders to be in on Monday, May 7, to Mr. F. W. Stephenson, Draper, Wellgate, Rotherham.

MAY 7.—ELGIN.—HOUSE.—The mason, carpenter, plumber, slater, plasterer, and painter work of a dwelling-house to be erected in High-street, Elgin. Plans and specifications with Mr. James Jameson, architect, 77, High-street, Elgin, and estimates lodged with him, on or before May 7.

MAY 7.—KINGUSSIE.—VILLA.—New villa to be erected on West-terrace, Kingussie. Plans and specifications may be seen with the architect, Mr. Alexander Mackenzie, C.E., by whom offers will be received up to May 7.

MAY 7.—LUMPHANAN.—COTTAGE.—Mason, carpenter, plumber, slater, painter, and glazier works of a cottage to be erected near Lumphanan Station. Plans and specifications may be seen with Mr. Andrew Fraser, Rosedale Cottage, Lumphanan. Tenders will be received by Mr. Isaac Fraser, Muirton, Corse, Lumphanan, up to and including May 7.

MAY.—7.—SOUTHAMPTON.—WAREHOUSE.—The Southampton Harbour Board invite tenders for certain alterations and additions to warehouse "G," to convert the same into an ice store. Conditions, etc., may be seen upon application to Mr. E. Cooper Poole, A.M.Inst.C.E., Engineer to the Board, and bills of quantities and form of tender obtained upon payment of 1*l.* Sealed tenders, endorsed "Alteration to Warehouse 'G,'" to be delivered at office of Mr. J. E. Pailthorpe, Clerk to the Board, Harbour Board Offices, Town Quay, Southampton, not later than noon on May 7.

MAY 8.—SIDDAL.—HOUSES, ETC.—The erection of five houses and stores at Siddal for the Economic Stores. Quantities from Messrs. Richard Horsfall & Son, architects, 22a, Commercial-street, Halifax, to whom tenders are to be delivered not later than 5 p.m.

MAY 9.—LINCOLN.—SCHOOL CHAPEL.—Wesleyan school chapel, West-parade, Lincoln. Bills of quantities from the architects, Messrs. Green, Knowles, & Russell, Adelphi Bank-chambers, South John-street, Liverpool, upon the deposit of 1*l.* 1s. Tenders to be delivered to the Rev. E. J. Brailsford, 11, West-parade, not later than 12 o'clock on May 9.

MAY 9.—SHOTLEY BRIDGE.—RETORT HOUSE.—The Directors of the Shotley Bridge and Consett District Gas Company invite tenders for the brickwork, slating, etc., required in the extension of their retort house at Shotley Bridge Gas Works. Plans and specifications may be seen at the Gas Office, Shotley Bridge. Tenders to be sent to Mr. M. Richley, Secretary Gas Office, Shotley Bridge, not later than May 9.

MAY 9-30.—WESTERHOPE.—SCHOOL.—Northumberland C.C. Education Committee invite tenders for erecting a new Council school, to accommodate 320 scholars, at Westerhope, near Newcastle-on-Tyne. Name and address to Mr. C. Williams, Secretary to the Education Committee, Pearl-buildings, Newcastle-on-Tyne, not later than May 9, together with a deposit of 2*l.* 2s. Plans of the work may be inspected at the Committee's offices, and tenders, endorsed "Tender for Westerhope School," must be forwarded to the Secretary not later than noon on May 30.

MAY 9.—WHITCHURCH, ETC.—SCHOOLS.—The Glamorgan C.C. invite tenders for the following works:—(1) Erection of infants' school and alteration of present buildings at the Heath Council School, Whitchurch; (2) erection of a new mixed and infants' school, at Godre'rgraig, near Ystalyfera; (3) erection of a new temporary cookery-room at the Bedlinog Council School. Plans, etc., of work No. 1. may be seen, and copies of the bill of quantities obtained, at offices of Mr. T. Mansel Franklen, Clerk of the C.C., Glamorgan County Offices, Westgate-street, Cardiff. Plans of work No. 2 may be seen, and copies of the bill of quantities obtained, at the Pontardawe Police-station, and at offices of Clerk. Plans of work No. 3 may be seen, and copies of specification obtained, at the school, and from Clerk. Sealed tenders (made out on the form supplied) are to be delivered to the Clerk, together with the full names and addresses of two substantial sureties, not later than May 9, marked outside, "Tender for Heath School," or "Tender for Godre'rgraig School," etc., as the case may be.

MAY 10.—MORLEY.—TENTERING HOUSE.—Tentering house, closets, and alterations of boiler-house, boiler setting, etc., at the Albert Mills, Morley, for the Albert Mills Company, Ltd. Tenders to be delivered at the office of the Company, Princess-street, Morley, before 4 p.m. on May 10. Messrs. T. A. Buttery & S. B. Birds, architects, Queen-street, Morley; and at Leeds.

MAY 10.—NEWBURGH.—CHAPEL.—The mason, carpenter, slater, lath and plaster, plumber, and painter and glazier works to be done in connexion with the renovation of chapel at Newburgh, Aberdeenshire. Plans and specifications to be seen with the Rev. J. S. Loutit, The Manse, Foveran; also copies to be seen with Mr. John Robertson, architect, Inverness, with whom offers are to be lodged on or before May 10.

MAY 11.—ABERNANT.—CHAPEL.—Rebuilding Bethesda Welsh Independent Chapel, Abernant, Aberdare, for the trustees. Plans and specification can be seen at office of Mr. T. Roderick, architect, Ashbrook House, Clifton-street, Aberdare. Endorsed tenders to be sent to Mr. J. Barclay, 10, Windsor-terrace, Abernant, not later than May 11.

MAY 11.—POTTERTON.—STEADING.—Mason, carpenter, and slater works of new steading at Gourdy Park, Belhelvie (Mr. Alexander Davidson, tenant). Plan and specifications may be seen with Messrs. Cochran & Macpherson, advocates, 152, Union-street, Aberdeen; or in the hands of the tenant; and offers will be received by Messrs. Cochran & Macpherson up to May 11.

MAY 11.—TAUNTON.—SCHOOL.—The Governors of Taunton School, Taunton, invite tenders for the erection of a new classroom wing and corridors, and also a new corridor to connect this extension with the new chapel. Plans, etc., seen, and bills of quantities obtained, at the offices of Mr. F. W. Roberts, architect and surveyor, 2, Hammet-street, Taunton. All tenders must be delivered by or before the first post on May 11.

MAY 12.—BELFAST.—SHOPS AND OFFICES.—The Arthur Square Development Company, Ltd., invite tenders for the erection of a new large block of buildings, comprising shops and offices, at Arthur-square, Arthur-street, and William-street, South, Belfast. Bills of quantities may be obtained from Mr. S. C. Hunter, Scottish Provident-buildings, on payment of a deposit of 2*l.* 2s. Plans and specification may be seen at office of Messrs. Blackwood & Jury, Ms.R.I.A.I., architects, 41, Donegall-place, Belfast. Sealed and endorsed tenders to be lodged with architects on or before 10 o'clock on May 12.

MAY 12.—REDRUTH.—BANKING PREMISES.—The erection of banking premises at Penryn-street, Redruth, and shop premises adjoining same, for Messrs. Barclay & Co., Ltd. The drawings and specifications may be seen by appointment at the offices of the architect, Mr. O. Caldwell, F.R.I.B.A., architect and surveyor, Victoria-square, Penzance. Sealed tenders, endorsed "Tenders for Bank," to be sent to the architect on or before May 12.

MAY 14.—DUBLIN.—ELECTRICITY SUB-STATION.—Dublin Electric Lighting Committee invite tenders for the erection of an electricity sub-station at Fairview, Dublin. Plans, etc., prepared by the City Architect, may be inspected daily (except on Saturdays) at his office, Municipal-buildings, Cork-hill, Dublin, between the hours of 11 a.m. and 4 p.m. Forms, etc., may be obtained at the office of the City Treasurer, Municipal-buildings, Cork-hill, Dublin, on payment of 2*l.* Tenders, under seal, addressed to the "Chairman, Electric Lighting Committee," and endorsed, "Tender for Electricity Sub-station, Fairview," to be lodged at the Electric Lighting Committee's Office, 3, Cork-hill, Dublin, not later than 4 o'clock on May 14.

MAY 14.—MARLPOOL.—SCHOOL.—Derbyshire Education Committee invite tenders for the erection of Council school, Marlpool, Heanor, to accommodate about 216 boys. Drawings, etc., at the office of the Architect to the Committee, St. Mary's-gate, Derby. Form of tender, etc., can be obtained at the architect's office, upon payment of 1*l.* 1s. Sealed tenders, in envelopes provided for the purpose, endorsed "Tender for New Council School, Marlpool," must be delivered to Mr. George H. Widdows, A.R.I.B.A., Architect to the Committee, County Education Offices, St. Mary's-gate, Derby, not later than 5 p.m., May 14.

MAY 14.—NANTYFFYLLON.—CHURCH.—The erection of a new English Calvinistic Methodist church at Nantyffyllon, near Maesteg. Plans and specification may be seen, and quantities obtained, at the offices of Mr. Arthur Lloyd Thomas, A.M.I.M.E., architect and engineer, Church-street-chambers, Pontypridd. Sealed and endorsed tenders to be sent to Mr. D. E. Watkins, 24, Humphrey-street, Nantyffyllon, on or before May 14.

MAY 15.—DUNSTON.—LATRINES, ETC.—Durham County Education Authority invite tenders for new latrines, asphalting, etc., at Dunston Council school. Plans, etc., may be seen at the architect's office, where quantities may be obtained. Sealed, endorsed tenders to be delivered to Mr. W. Rushworth, F.R.I.B.A., Architect, County Education Offices, Durham, not later than May 15.

MAY 15.—SHEFFIELD.—TENEMENTS.—Sheffield Health Committee invite tenders from the following trades for work required in connexion with the erection of tenements on sect. 2 of the Crofts Area:—(1) Excavator, bricklayer, and mason; (2) carpenter and joiner; (3) slater; (4) plasterer; (5) plumber and glazier; (6) painter. Specifications and plans may be seen, and quantities obtained, at the office of Mr. Charles F. Wike, C.E., City Surveyor, Town Hall, Sheffield, on payment of 1*l.* 1s. Tenders, endorsed "Crofts Dwellings," are to be sent in not later than 9 a.m. on May 15, addressed to "The Chairman and Members of the Health Committee, City Surveyor's Office, Town Hall, Sheffield."

MAY 16.—HULL.—GREENHOUSE.—Hull Parks and Burial Committee of the Hull Corporation invite tenders for the erection of a greenhouse, which they propose to erect in the East Park, Holderness-road. Drawings and specification may be seen at the office of Mr. Joseph H. Hirst, City Architect, Town Hall, Hull. Tenders, sealed, and endorsed "Tender for Greenhouse, East Park," are to be addressed to the Chairman of the Parks and Burial Committee, and delivered to the Town Clerk's Office, Hull, before 10 a.m., on May 16.

MAY 16.—RHYMNEY.—ALTERATION TO CHAPEL.—Alterations and general renovation of Brynhyfryd C.M. Chapel, Rhymney. Plans and specifications to be seen with Mr. Benjamin Jones, 29, Plantation-street, Rhymney, to whom tenders are to be delivered on or before May 16, sealed, and endorsed "Tender for Chapel." Mr. R. S. Griffiths, M.S.A., architect and surveyor, Tonypandy.

* MAY 16.—TOOTING.—FIRE-RESISTING WORKS, ETC.—Fire-resisting works, etc., to a stone building at Fountain Fever Hospital, Tooting, S.W., for the Metropolitan Asylums Board. Drawings, specifications, conditions of contract, and form of tender may be seen at office of the Board, Embankment, E.C., on and after May 7, and can be obtained on payment of a deposit of 1*l.* Tenders to be addressed as noted on the form, to be delivered Board's office not later than 10 a.m. May 16.

MAY 17.—WALMERSLEY.—SCHOOL.—Lancashire Education Committee invite tenders for the enlargement and improvement of the Turn-i'-th'-Lane Council School, Walmersley-cum-Shuttleworth. The plans may be seen at the Council Offices, Ramsbottom, and bills of quantities obtained at the office of the County Architect, Mr. Henry Littler, 16, Ribblesdale-place, Preston, by payment of a deposit of 1*l.* Tenders must be delivered before 12 o'clock noon on May 17, sealed and endorsed, to Mr. W. Dilworth, Arden House, Summerseat, near Manchester.

MAY 18.—BANWELL.—GRAND STAND, ETC.—The erection of the grand stand, horse stalls, cattle and sheep pens, show and cart horse rings, band stand, three registered turnstiles with barriers and pay-boxes, four tents for cheese exhibits, committee, secretary, and ladies, erecting necessary jumps and preparing ground for, and clearing up after, show, etc., in connexion with the annual show to be held on August 15, at Banwell. Full particulars may be obtained from the Hon. Secretary, Mr. A. S. E. Sedgwick, 6, Magdala-buildings, Weston-super-Mare. All tenders must be received by May 18.

* MAY 18.—BRIXTON.—BUILDINGS.—The Vicar and Committee of St. Paul's, West Brixton, invite tenders for pulling down the existing temporary iron buildings and erecting on the site fronting to Allardyce-street, Brixton:—(1) A new parochial hall; (2) gymnasium and classrooms; (3) caretaker's house. Drawings and specifications may be seen at the offices of Mr. C. E. Hewitt, architect, 21, Old Queen-street, Westminster, from whom also bills of quantities may be obtained, after May 8, on depositing 5*l.* Sealed tenders, on the forms supplied, before 12 noon, addressed to the architect, May 18.

MAY 22.—CLAPTON.—ADAPTION OF HOUSE AND STABLES AS REFRESHMENT-ROOMS, ETC.—Adaption of Springfield House and stables as refreshment-rooms, superintendent's and gardener's quarters, bothy, erection of conveniences for men, etc., at Springfield Park, Clapton, N.E., for the L.C.C. Drawings, specifications, form of tender, etc., to be obtained from Architects' Department, 15, Pall-mall East, S.W., on payment to cashier at the County Hall, Spring-gardens, S.W., of 10s. 6d. Tenders to be delivered at County Hall, endorsed "Tender for Adaptation of Springfield House, etc.," and addressed to the Clerk, Spring-gardens, S.W., not later than 10 a.m., May 22.

MAY 22.—EGG BUCKLAND.—LODGE.—Plymouth Corporation invite tenders for the erection and completion of a lodge, etc., at the New Cemetery, Egg Buckland. Plans and specification can be seen, and forms of tender and bills of quantities obtained, on deposit of 2*l.* in cash. Sealed tenders, accompanied by the fully priced-out bills of quantities, to be delivered at the offices of Mr. James Paton, Borough

Engineer and Surveyor, Borough Engineer's Office, Municipal Offices, not later than 5 p.m. on May 22.

MAY 23.—DERBY.—SCHOOL.—The Derby Education Committee invite tenders for the erection of a new school on the Nottingham-road. Plans, etc., may be seen, and schedules of quantities may be obtained, on application to Mr. Arthur Eaton, architect, St. James's-street, Derby, on and after Monday, May 7. The sum of 1*l.* 1s. will be charged for the schedule of quantities. Tenders, on the form supplied, together with the priced schedule of quantities, must be delivered at the Education Office, Becket-street, Derby, before 12 o'clock noon on May 23, endorsed "Tender for New School on Nottingham-road."

* MAY 25.—HYTHE.—NEW COUNCIL SCHOOL.—To accommodate 250 infants for the Kent Education Committee. Drawings and specification may be inspected at the office of the architect, Mr. A. Bromley, Radnor-chambers, Folkestone. Names of those desiring to tender to be sent to the architect before noon on May 11, with deposit of 1*l.* Tenders, on form supplied, to Mr. R. Lonergan, 11, Cheriton-place, Folkestone, before noon, May 25.

* MAY 26.—POULTON.—NEW SCHOOLS.—For the Walasey U.D.C. Education Committee, in accordance with drawings and specifications prepared by Mr. Joseph Holt, architect, 9, Albert-square, Manchester. Copies of bills of quantities and general conditions, with form of tender, may be obtained from Architect's office, on and after May 7 on depositing 1*l.* 1s. Sealed tenders, endorsed "Tender for Poulton School," by post not later than May 26.

No DATE.—GUILDFORD.—ALTERATIONS, ETC., TO PREMISES.—Alterations and repairs to premises in the Walnut Tree Close-road, Guildford. Bills of quantities may be obtained on application to Mr. E. Goodrham Nye, P.A.S.I., architect and surveyor, Jenner-road, Guildford.

No DATE.—PENTRECHWYTH.—REBUILDING.—Rebuilding the Rising Sun, Pentrechwyth, near Swansea, for Mr. E. Evans Bevan, Neath. Plans and specification may be seen, and bills of quantities obtained, upon application to Mr. J. Cook Rees, architect and surveyor, Church-place, Neath.

No DATE.—RADYR.—VILLAS.—For building six villas at Radyr. Contractors wishing to tender for same to send their names to office of Mr. John H. James, M.S.A., architect, 18, Quay-street, Cardiff, where plans can be seen and quantities obtained upon paying deposit of 2*l.* 2s.

No DATE.—REDMIRE.—VICARAGE.—The erection of a new vicarage at Redmire, Wensleydale. Names to the architects, Messrs. Bland & Bown, North Park-road, Harrogate, and quantities will be forwarded when ready.

* No DATE.—UTTOXETER.—New school for the Staffordshire Education Committee. Names to be sent by May 16 to Mr. Graham Balfour, Director of Education, Stafford, at whose office drawings and specifications can be seen. Quantities supplied on deposit of 1*l.* 1s.

No DATE.—WIMBORNE.—VILLAS.—The erection of a pair of villas at Wimborne. Plans and specification may be seen at the offices of Mr. Charles Munckton, surveyor, Wimborne.

## ENGINEERING, IRON, AND STEEL.

MAY 8.—BOMBAY.—BRIDGEWORK.—Bombay, Baroda, and Central India Railway Company Directors invite, up to noon on May 8, tenders for the supply of steel and cast-iron bridgework. Tenders must be made on a form, copies of which, with specification, can be obtained at offices of Mr. T. W. Wood, Secretary, Gloucester House, Bishopsgate-street Without, London, E.C., on payment of 21s. each (which will not be returned).

MAY 9.—INDIA.—IRON BARS.—The East Indian Railway Company invite tenders for the supply and delivery of wrought-iron bars, as per specification, to be seen at the company's offices. Tenders are to be sent to Mr. C. W. Young, Secretary, Nicholas-lane, London, E.C., marked "Tender for Wrought-iron Bars," not later than 12 o'clock noon on May 9. For each specification a fee of 1*l.* 1s. is charged, which cannot, under any circumstances, be returned.

MAY 9.—MIDDLEWICH.—WATER MAIN.—Middlewich U.D.C. invite tenders for the supply of about twelve miles of 8-in. cast-iron socket and spigot water pipes; also for 8-in. valves and automatic air valves. Further particulars and specification can be obtained on application by letter to Mr. Frederick W. Stocks, Engineer, Town Hall, Middlewich. Sealed tenders, endorsed "Water Main," to be delivered to Mr. C. F. Lawrence, Clerk to the Council, Town Hall, Middlewich, on or before May 9, at 9 a.m.

MAY 10.—GREENHILL.—TANK.—The District Committee of the Middle Ward of the county of Lanark invite tenders for providing and erecting a steel tank at Greenhill, and in laying cast-iron pipes and carrying out relative works. Plans may be seen and copies of the specification and schedule obtained at the office of the engineers, Messrs. J. & A. Leslie & Reid, C.E., 72A, George-street, Edinburgh, on payment of 1*l.* Tenders, endorsed "Tender for Greenhill Tank," must be lodged with Mr. W. E. Whyte, District Clerk, District Offices, Hamilton, not later than first post on May 10.

MAY 10.—SOUTHAMPTON.—BATTERY, ETC.—Southampton Corporation invite tenders for supplying and fixing at their electric light works:—(1) storage battery; (2) chain grate mechanical stoker. Forms of tender, etc., may be obtained upon application to Mr. H. F. Street, Borough Electrical Engineer, Electricity Supply Station, Back of the Walls. Sealed and separate tenders, properly endorsed, must be delivered at the Town Clerk's office before 2 p.m. on May 10.

MAY 11.—EDINBURGH.—CONVENIENCES.—Edinburgh Corporation invite tenders for the construction of a new convenience at Tollcross. Schedules, etc., from the Burgh Engineer. Sealed tenders, marked "Tender for Tollcross Convenience," must be lodged with Mr. Thomas Hunter, W.S., Town Clerk, City-chambers, Edinburgh, not later than May 11.

MAY 12.—HULL.—LAYING MAIN.—The Corporation invite tenders for the cartage of pipes, trenchwork, laying, and jointing of about 1½ miles of 30-in. water main. Form, etc., may be obtained of Mr. F. J. Bancroft, City Water and Gas Engineer, Alfred Gelder-street, Hull, on payment of 1*l.* Cheques and postal orders to be made payable to Mr. T. G. Milner, City Treasurer, Hull. Tenders, endorsed "Tender for Laying 30-in. Main," are to be addressed to the Chairman of the Water and Gas Committee, and delivered at the Town Clerk's office not later than May 12.

MAY 12.—HULL.—PIPES.—Hull Water and Gas Department of the Corporation invite tenders for about 1,250 tons of 30-in. cast-iron pipes and special castings. Forms, etc., may be obtained from Mr. F. J. Bancroft, City Water and Gas Engineer, Alfred Gelder-street, Hull, on payment of 1*l.* Cheques and postal orders to be made payable to Mr. T. G. Milner, City Treasurer, Hull. Tenders, endorsed "Tender for 30-in. Pipes and Specials," are to be addressed to the Chairman of the Water and Gas Committee, and delivered at the Town Clerk's office not later than May 12.

MAY 12.—STOKE.—PLANT.—Stoke-upon-Trent Electricity Committee invite tenders for the supply and delivery of:—Contract 13, steam dynamo (single-acting engine); contract 14, condensing plant (surface); contract 15, boosters and balancers. Forms, etc., from Mr. P. J. S. Tiddeman, Borough Electrical Engineer, on payment of a deposit of two guineas for one contract. Tenders to be sent in, addressed "The Electricity Committee," Electricity Works, Stoke-upon-Trent, not later than May 12, and endorsed "Tender for ——."

MAY 14.—HANLEY.—DESTRUCTOR WORKS, ETC.—Hanley Corporation invite tenders for (1) destructor works (clinker-crushing plant); (2) mortar mill; (3) steam engine; (4) alternating current motor. All the above are for hiring terms per annum, with option of purchase by the Corporation. Forms, etc., from Mr. J. Lobley, Borough Engineer, Hanley. Sealed and endorsed tenders to be sent in before Monday night, May 14.

MAY 14.—MANCUESTER.—REFRIGERATING MACHINERY.—The Markets Committee invite tenders for the extension of the refrigerating machinery and plant at Smithfield Market. Specification and form of tender may be obtained on application at the City Surveyor's Office, Town Hall, Manchester, on payment to the City Treasurer of two guineas. All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester." Tenders, enclosed in the official envelope and addressed to the Chairman of the Market Committee, to be delivered at the City Surveyor's office not later than noon on May 14.

MAY 15.—AMPTHILL.—WATER SUPPLY.—Ampthill U.D.C. invite tenders for (*a*) the supply, delivery, and laying of about 7 miles of 6 in., 4 in., and 3 in. cast-iron water mains, with sluice valves, hydrants, air valves, and water-level indicator; (*b*) the construction of engine and producer house and brick softening tanks at Clophill, and a 150,000 gallons capacity service reservoir in Ampthill Park; (*c*) the supply, delivery, and erection of suction gas plants, gas engines, air compressors, surface pumps, softening plant, and well, with air-lifting pumping plant, at Clophill. Forms, etc., may be seen on and after May 3 next at the offices of the engineers, Messrs. W. R. & W. Phillips, Luton, Beds, from whom copies of same can be obtained on payment of two guineas for each *a*, *b*, and *c* contracts, half of which sum will be returned on receipt of a *bond fide* tender. Sealed tenders, on the prescribed form, and endorsed "Ampthill Waterworks, Contract A" (B, or C, as the case may be), to be addressed to Mr. Alfred T. Trethewy, Clerk to the Council, U.D.C. Offices, Ampthill, Bedfordshire, and delivered on or before May 15.

MAY 15.—DUFFTOWN.—PIPING.—The piping and cementing works in connexion with the purification scheme to be carried out near the Malt Kiln Burn, Burgh of Dufftown. Plans and specifications may be seen with Mr. Donald M'Kay, Burgh Surveyor, Dufftown, who will meet intending offerers on the grounds, on May 12, from 10 a.m. till 1 p.m.; and sealed tenders will be received by the Town Clerk, on or before May 15.

MAY 15.—INDIA.—RAILS, ETC.—South Indian Railway Company, Ltd., invite tenders for the supply of:—(1) Steel rails (41½ lb. and 50 lb.), 1742 tons, and fishplates for the same, 85 tons; (2) cast-iron pot sleepers, 1750 tons; (3) tie bars, gibs, and cotters, 139 tons; (4) fish-bolts, spikes, and bearing plates, 98 tons; (5) iron wire fencing and steel poles, 32 tons; (6) general stores, comprising hardware, iron, steel, metals, oils and colours, leather and rubber goods, electric stores, and sundries; (7) locomotive stores, comprising copper and steel plates, tires axles, springs, and brass and steel tubes; (8) stationery, comprising books, paper, envelopes, ink, and sundries. Forms, etc., may be obtained at the company's offices on and after Monday, April 30. Tenders, addressed to the company, marked "Tender for Rails," or as the case may be, must be left with Mr. Henry W. Notman, Managing Director, Company's Offices, 55, Gracechurch-street, London, E.C., not later than 12 o'clock noon of May 15. A charge, which will not be returned, will be made of 20s. for each copy of specifications Nos. 1, 2, and 6, and of 10s. for each copy of the others. Copies of the drawings may be obtained at the office of Sir George B. Bruce, 3, Victoria-street, Westminster, on payment of 5s. per sheet.

MAY 15.—SOUTHERN MAHRATTA.—STEEL PALING.—The Board of Directors of the Southern Mahratta Railway Company, Ltd., invite tenders for unclimbable steel paling, as per specification and drawing, which may be seen at the offices of the company. The charge for the specification is one guinea each, which will not be returned. Tenders must be sent in, addressed to the Secretary, Mr. Edw. Z. Thornton, 46, Queen Anne's-gate, S.W., marked "Tenders for Steel Paling," not later than 12 o'clock noon on May 15.

MAY 15.—WARRENPOINT.—SEA BATHS.—The U.D.C. invite tenders from persons willing to contract for the construction of baths in accordance with plans and specifications prepared by Messrs. Kaye, Parry, & Ross, civil engineers and architects, 63, Dawson-street, Dublin. Bills of quantities, based upon the plans and specifications, have been prepared by Messrs. Beckett & Medcalf, quantity surveyors, and copies can be obtained at the offices of the architects on payment of a sum of 1*l.* Tenders, enclosed in sealed envelopes, marked "Tender for Baths," and addressed to the Chairman of the Council, must be delivered at office of Mr. Bernard M'Kernan, Clerk to the Council, Town Hall, Warrenpoint, on or before May 15.

MAY 16.—SALFORD.—PIPES.—Salford Corporation invite tenders for cast-iron pipes, etc., at the sewage works. Forms of tender, etc., at the Borough Engineer's Office, Town Hall, Salford. Tenders, endorsed "Pipes, etc., for Sewage Works," addressed to the Chairman of the River Committee, must be delivered to Mr. L. C. Evans, Town Clerk, Town Hall, Salford, not later than 12 noon on May 16.

MAY 19.—ATHY.—WATERWORKS.—The U.D.C. of Athy (Co. Kildare) invite tenders for the execution of the following contracts:—Contract No. 1, constructing reservoir and intake wells, and carting and laying about ten and three-quarter miles of 6-in. to 3-in. cast-iron pipes, valves, etc.; contract No. 2, supplying and delivering in Athy about 670 tons 6-in. to 3-in. cast-iron pipes; contract No. 3, supplying and delivering in Athy the requisite valves, hydrants, etc. Plans and specifications can be seen at the Town Hall, Athy, or at the office of the Solicitor to the Council, Mr. Valentine Kilbride, 4, Dame-street, Dublin; also at the office of the Engineer, Mr. James F. Reade, A.M.I.C.E., 9, Bridge-street, Westminster, S.W., from whom copies of schedules may be obtained on payment of 1*l.* for each contract. Sealed tenders to be delivered to Mr. J. A. Lawler, Clerk to the U.D.C., Board-room, Athy; Valentine Kilbride, Solicitor for the U.D.C., 3, Dame-street, Dublin, not later than May 19.

MAY 23.—LEITH.—COAL HOIST.—The Commissioners for the Harbour and Docks of Leith invite designs and tenders for a movable hydraulic coal hoist, capable of lifting and tipping a waggon load of 30 tons at a height of 61 ft. above the level of the quay, complete with cradle shoot, anti-breakage crane, and other appliances. A plan of the site, with information as to the requirements, the conditions of contract, and other particulars, may be seen on application to the engineer, Peter Whyte, M.Inst.C.E., Dock Offices, Tower-place, Leith. The tenders are to be delivered to Mr. Victor A. Noel Paton, Clerk to the Commissioners, 31, Melville-street, Edinburgh, on or before May 23.

## MISCELLANEOUS.

MAY 7.—BRADFORD.—STOOLS.—Bradford Education Committee invite tenders for the supply of ninety-four stools, drawings of which may be seen on application in the Stores Department at Education Office. Sealed tenders, endorsed "Stools," should be delivered to Mr. Tho. Garbutt, Secretary, Education Office, Manor-row, Bradford, not later than 12 noon on May 7.

MAY 7.—BRISTOL.—FITTING UP.—Bristol Corporation invite tenders for fitting-up the City Analyst's office at No. 13, Prince-street. A copy of the specification can be obtained on application to Mr. Peter Addie, City Valuer, Council House, Bristol. Tenders must be delivered at the Council House, Bristol, not later than May 7, addressed to the Town Clerk, and endorsed, "Tender for Fitting-up City Analyst's Office."

MAY 7.—LLANDUDNO.—FEEDER CABLE.—Llandudno District Council invite tenders for the supply and delivery of 1,211 yds. ·25 triple concentric feeder cable, paper insulation. Form of tender may be had on application to Mr. Harold Morton, Electrical Engineer, Electricity Works, Llandudno. Tenders to be lodged with Mr. Alfred Conolly, Clerk to the Council, Town Hall, Llandudno, on or before May 7, endorsed "Tender for Feeder."

MAY 7.—WENLOCK.—HAULING.—Wenlock Borough Council invite tenders for the hauling of stone and material from Much Wenlock and Presthope Railway stations on to the main and district roads in the Wenlock district, as required. The contractor is to be responsible for demurrage. Price per ton should be stated, also price per hour for single horse, man, and cart, and price per hour for two horses, one man, and cart. Sealed tenders, endorsed "Wenlock Hauling," must reach office of Mr. F. H. Potts, Town Clerk's Office, Much Wenlock, Salop, on or before May 7.

MAY 8.—BIRMINGHAM.—ELECTRICAL APPARATUS.—Various sizes of electrical motors required by the Electric Supply Committee of the Corporation. Form, etc., at the office of the City Electrical Engineer, Mr. R. A. Chattock, M.I.E.E., 14, Dale-end, Birmingham. Before obtaining the general conditions and specification it will be necessary to deposit the sum of 1*l.* 1s.. Tenders to be sent in under seal, addressed to the City Electrical Engineer, at the Electric Supply Department, Dale-end, Birmingham, and endorsed on the outside, "Tender for Electric Motors," not later than 12 o'clock noon, May 8.

MAY 8.—FINSBURY.—JARRAH WOOD PAVING.—Finsbury Borough Council are prepared to receive alternative tenders for paving the carriageways of City-road (part of), Finsbury-square, Finsbury-pavement, and Clerkenwell-road (north side) with 3-in. by 4½-in. by 9-in. Jarrah wood blocks, or 3-in. sectional Jarrah wood blocks. The specification can be seen, and form of tender obtained, at the Borough Surveyor's Office, Finsbury Town Hall, Rosebery-avenue, any day (except Saturday), between 10 a.m. and 4 p.m., on deposit of 1*l.* 1s. Tenders, endorsed "Wood Paving," to be delivered to Mr. George Whitehead Preston, Town Clerk, Finsbury Town Hall, Rosebery-avenue, E.C., not later than 10 a.m. on May 8.

MAY 9.—TWICKENHAM.—FIRE ESCAPE.—Twickenham U.D.C. invite tenders for the supply of a combined four-wheel hose carriage and telescopic fire escape. Further particulars can be obtained on application to Mr. Fred W. Pearce, F.S.I., Surveyor to the Council, Town Hall, Twickenham. Sealed tenders, endorsed "Tender for Fire Escape," to be delivered to Mr. H. Jason Saunders, Clerk to the Council, Town Hall, Twickenham, not later than 12 o'clock noon on May 9.

MAY 10.—DEESIDE.—LARCH POSTS AND RAILS.—Larch posts and rails, to be delivered at Torphins, Aboyne, and Ballater. Schedules of quantities, etc., may be

had on application to Mr. John Milne, District Surveyor, Aboyne, and sealed offers will be received by the District Clerk, Mr. John Murray, 22, Bridge-street, Aberdeen, up to May 10.

MAY 10.—LEITH.—GRANOLITHIC FLOOR.—Leith Harbour and Docks Commissioners invite tenders for laying a granolithic floor in sheds at Albert Dock, Leith. Specification, form of tender, etc., on application at the office of Mr. Peter Whyte, M.Inst.C.E., Superintendent of the Harbour and Docks, Tower-place, Leith. Tenders are to be delivered to Mr. Victor A. Noel Paton, Clerk to the Commission, 31, Melville-street, Edinburgh, on or before May 10.

MAY 11.—EDINBURGH.—CARTS.—Edinburgh Cleansing Department invite tenders for the supply of six street watering carts capable of containing about 400 gallons. Further particulars may be had from the Inspector of Cleansing, 331, High-street. Offers, marked "Watering Carts," to be lodged with the Town Clerk not later than May 11.

MAY 14.—EDINBURGH.—ARC LAMP-POSTS.—Edinburgh Corporation invite tenders for arc lamp-posts. The specification, form of tender, and drawings can be obtained from the Electrical Engineer, Dewar-place, Edinburgh, on payment of a deposit of 2*l.* 2s. Tenders, on the prescribed form, enclosed in sealed envelopes, and endorsed on the outside "Tender for Arc Lamp-posts," must be sent to the Town Clerk, City-chambers, Edinburgh, not later than May 14.

MAY 14. — HAMBLEDON. — CARTAGE. — Hambledon R.D.C. invite tenders for the supply of good materials for use on the roads in the district of Hambledon; also for carting materials on the various roads in the district. Forms may be obtained of the Surveyor to the Council, Mr. Samuel B. Hasell, Eastwood-road, Bramley. Sealed tenders, endorsed "Tender for ——," must be sent to Mr. Ferdinand Smallpeice, Clerk to the Council, 138, High-street, Guildford, on or before May 14.

MAY 14.—KINGSTON.—TIMBER.—Kingston Guardians invite tenders for the supply of 120 fathoms of best Swedish board ends, first quality, square edge, to be delivered at the Workhouse, Kingston-on-Thames, as and when required. Tenders must reach Mr. Jas. Edgell, solicitor, Clerk, Union Offices, Coombe-road, Kingston-on-Thames, not later than May 14., marked "Tender for Wood."

MAY 14.—LEEK.—GAS DYNAMO.—Leek U.D.C. invite tenders for one gas dynamo. Form, etc., can be obtained from Mr. R. M. Carr, A.M.I.E.E., Electrical Engineer, Electricity Works, Leek, on payment of a deposit of 1*l.* 1s. Sealed tenders, endorsed "Tender for Gas Dynamo," and adressed to the Chairman of the Electricity Committee, must be delivered at the Town Hall, Leek, not later than 12 o'clock noon on May 14.

MAY 15.—BRISTOL.—RIVER WORK.—Bristol Sanitary and Improvement Committee invite tenders for the widening, straightening, and deepening of the bed or channel of a part of the River Frome, lying under a street called the Broad Weir. The specification and drawings may be seen at the office of the City Engineer, 63, Queen-square, and a copy of the instructions for tender, a form of tender, etc., may be obtained at the same office on deposit of a cheque for 3*l.* Tenders must be delivered not later than 10 a.m. on May 15.

MAY 15.—STOCKTON.—LEADING STONE.—Stockton R.D.C. invite tenders for leading stone and other materials for the roads in their district. Full particulars and forms of tender may be obtained on application to Mr. W. Burton, Highway Surveyor, Billingham, Stockton-on-Tees, and tenders, marked "Tenders for Leading," must be sent to Mr. T. H. Faber, Clerk, Stockton-on-Tees, not later than 12 noon on May 15.

MAY 16.—SALFORD.—FILTER TILES.—Salford Corporation invite tenders for about 3,500 sq. yds. of hard floor tiles, similar to the sample, which may be seen at the Salford Sewage Works, Weaste. Forms of tender and particulars may be obtained at the Borough Engineer's Office, Town Hall, Salford. Tenders, endorsed "Filter Tiles," addressed to the Chairman of the River Committee, must be delivered to Mr. L. C. Evans, Town Clerk, Town Hall, Salford, not later than 12 noon on May 16.

MAY 16.—SALFORD.—METER.—Salford Gas Committee invite tenders for the supply and erection of a station meter (50,000 cubic ft. per hour capacity) at their Bloom-street Works. Form of tender, etc., obtained (for which a charge of 1*l.* 1s. will be made) on application to Mr. William W. Woodward, engineer, Gas Offices, Bloom-street, Salford. Sealed tenders, endorsed 'Tender for Meter," addressed to the Chairman of the Gas Committee, Town Hall, Salford, to be delivered to Mr. L. C. Evans, Town Clerk, Town Hall, Salford, not later than 3 p.m. on May 16.

MAY 16.—STOW.—CARTING.—East Stow R.D.C. invite tenders for carting road materials in the several parishes of the East Stow Rural District during the ensuing year. Forms of tender can be obtained of Mr. Gordon Harrison, surveyor, Stowmarket. Tenders to be sent in by 4 p.m. on May 16 to Mr. R. E. Wilkes, Clerk to the Council, Stowmarket, in envelopes which will be provided for the purpose.

MAY 16.—TORQUAY.—FIRE ESCAPE.—Torquay Corporation invite tenders for the supply of one 50-ft. telescopic fire escape, on pair-horse carriage, with chemical engine combined, one four-wheeled one-horse hose-cart, and sundry other appliances. Forms of tender and specifications may be obtained on application to the Chief Officer of the Torquay Fire Brigade. Sealed tenders, endorsed "Tender for Fire Appliances," addressed to Mr. S. C. Chapman, Assoc.M.Inst.C.E., Town Hall-chambers, Torquay, to be delivered not later than 9.30 a.m. on May 16.

MAY 18.—BERMONDSEY.—CONDENSER AND COOLING TOWER, ETC.—Bermondsey Borough Council invite tenders for the supply and erection of :—(*a*) One condenser and cooling tower, etc.; (*b*) arc lamp lowering gear. Form of tender for (*a*) may be obtained at the Town Hall, Spa-road, S.E., on payment of 2*l.* 2s. in cash. A copy of the specification may also be inspected at the office of the Borough Electrical Engineer, Mr. W. E. J. Heenan, M.I.E.E., Spa-road, S.E. Specification and form of tender for (*b*) may be obtained on aplication to the Borough Electrical Engineer. Tenders, addressed to the Town Clerk, and endorsed "Tender for ——" must be delivered to Mr. Fredk. Ryall, Town Clerk, Town Hall, Spa-road, S.E., not later than 4 p.m., May 18.

MAY 23.—BEDFORD.—CABLES.—Bedford Electricity Department invite tenders for the supply of high and low tension cables over a period of twelve months. Specification, etc., from Mr. R. W. L. Phillips, A.M.I.E.E., Borough Electrical Engineer, Cauldwell-road, Bedford, accompanied by a deposit of 1*l.* 1s. Tenders to be delivered on or before noon, May 23.

MAY 23.—NEW SOUTH WALES.—WIRE NETTING.—4,000 miles galvanised wire netting required for New South Wales Government. Conditions of contract, and forms of tender (which are returnable up to 12 noon on May 23) may be obtained of the Agent-General for New South Wales, 125, Cannon-street, London, E.C.; and Mr. C. W. Darley, M.Inst.C.E., consulting engineer, 9, Victoria-street, Westminster, S.W.

NO DATE.—GIRSBY.—CLEANING OUT RIVER.—Cleaning out of part of the River Bain, at Girsby, near Lincoln. Particulars can be obtained from Mr. Crisp, Girsby Manor, near Lincoln, and detailed estimates to be sent in to Mr. H. B. Melville, Estates Office, Warrington.

NO DATE.—LEITH.—ELECTRIC INSTALLATION.—Leith Parish Council invite tenders for the installation of electric light, wiring, and fittings required at the new poorhouse, Leith. Application to be made to Mr. James Miles, Clerk to the Council, 45, Charlotte-street, not later than May 8, with deposit of 2*l.* 2s.

NO DATE.— THORNTON.— BOWLING-GREEN.— Relaying of the bowling-green behind the Great Northern Hotel (tram terminus), Thornton. Particulars may be obtained from Mr. Rogers, Caledonia Brewery, Bradford.

## PAINTING, etc.

MAY 7. — KINGSTOWN, IRELAND. — PAINTING. — The U.D.C. of Kingstown invite tenders for painting the Victoria shelter in People's Park, band-stand, on East Pier, railings, and chains on Victoria Beach, Queen's-road, etc.; also the shelter on East Pier, hydrant indicators, etc. Full particulars and specifications can be procured from the Town Surveyor, at his office, Town Hall, Kingstown. Tenders will be received by Mr. M. A. Manning, Town Clerk, up to and on May 7.

MAY 8.—ROCHDALE.—PAINTING.—The Rochdale Corporation invite tenders for painting the seats, etc., in Broadfield Park. Specifications may be obtained at the office of the Borough Surveyor, Town Hall, and further particulars from the Park Superintendent. Tenders, endorsed "Painting at Broadfield Park," to be delivered at office of Mr. W. H. Hickson, Town Clerk, Town Hall, Rochdale, not later than 9 a.m. on May 8.

* MAY 16.—SWANLEY, KENT.—SCHOOL.—Cleaning and painting works at White Oak School, Swanley, Kent, for the Metropolitan Asylums Board. Specification, condition of contract, and form of tender may be inspected at the Board's office, Embankment, E.C., on and after May 7, and can be obtained on deposit of 1*l.* Tenders, to be addressed as noted on form, to be delivered at the Board's office not later than 10 a.m. May 16.

MAY 22.—CARDIFF.—PAINTING.—Cardiff Corporation invite tenders for the painting of the cab shelters. Further particulars may be obtained from the Head Constable, Chief Police Station, Cardiff. Tenders, endorsed "Painting Cab Shelters," must be delivered to Mr. J. L. Wheatley, Town Clerk, Town Hall, Cardiff, before May 22.

## ROADS, SANITARY AND WATER WORKS.

MAY 7.—HALIFAX.—STREET WORKS.—Halifax Highways Committee invite tenders for the execution of private improvement works in Eldroth-mount, Timber-street, and Baltic-street, and three back streets and six cross streets adjoining Beckenham-place. Forms, etc., on application to Mr. James Lord, M.I.C.E., Borough Engineer, Town Hall, Halifax, upon payment of the sum of 1*l.* Tenders, properly endorsed, must be sent to Mr. Keighley Walton, Town Clerk, on or before May 7.

MAY 7.—ST. IVES.—TAR MACADAM.—St. Ives Corporation invite tenders for laying down about 640 yds. of tar macadam. Specifications and particulars can be seen at the Town Clerk's Office, St. Ives. Sealed tenders, endorsed "Tender for Tar Macadam," to be sent by post, not later than May 7.

MAY 8.—WARRINGTON.—PAVING.—Warrington Electricity and Tramways Committee invite tenders for the maintenance of the paving on the tramway track for a period of six months. Specification and form of tender on application to Mr. F. V. L. Mathias, A.M.I.E.E., Borough Electrical and Tramway Engineer, Howley, Warrington. Tenders, addressed to "The Chairman of the Electricity and Tramways Committee," Town Hall, Warrington, must be sealed with wax, and endorsed "Tender for Paving," and delivered not later than 12 o'clock noon, on May 8.

MAY 9.—CARDIFF.—ROAD WORKS.—Cardiff Corporation invite tenders for forming, metalling, paving, kerbing, and channelling the under-mentioned streets at Roath, Splott, and Canton, viz. :—Kimberley-road, Kimberley-lane North, Kimberley-lane South, Harrissmith-road, Harrissmith-lane West, Harrissmith-lane East, Mafeking-road, Roath Branch-lane East, Roath Brook-lane, Walker-road, Walker-lane, University-place, Eyre-street, Coveny-street, Coveny-lane, Habershon-lane, and Brunswick-street. Separate tenders are required for :—(1) Forming and metalling the Carriageways; (2) paving, kerbing, and channelling the footways. Forms of tender obtained at the office of Mr. W. Harpur, M.Inst.C.E., City Engineer. Sealed tenders, endorsed "Tenders for Private Street Works," are to be delivered at office of Mr. J. L. Wheatley, Town Clerk. Town Hall, Cardiff, on or before May 9.

* MAY 9.—FULHAM.—ROADMAKING.—The Fulham Borough Council invite tenders for making up carriage way of Gresswell-street, Fulham. Plans and specifications may be seen and information obtained from Mr. Francis Wood, Borough Surveyor, Town Hall, Fulham, S.W. Tenders to Town Clerk, Town Hall, Fulham, before 7 p.m. May 9.

MAY 9.—GLASGOW.—STREET WORKS.—The Corporation of Glasgow invite offers for (1) excavations and mason work, also cast-iron pillars and steel beams; (2) wright work; (3) slater work; (4) plumber work; (5) plaster work; and (6) tile work in connexion with buildings proposed to be erected in Hope-street. Forms, etc., on application at the office of Public Works, City-chambers, 64, Cochrane-street. Sealed offers, marked outside "Offer for ——, Hope-street Improvement," must be lodged with Mr. A. W. Myles, Town Clerk, City-chambers, Glasgow, not later than May 9, at 10 a.m.

MAY 10.—COWPEN.—TAR MACADAMISING.—Cowpen U.D.C. invite tenders for tar macadamising Market-street and portion of Bowes-street (about 2,600 sq. yds.) within their district. Plans and specifications may be seen, and form of tender obtained, at the offices of Mr. Robert Grieves, Surveyor to the Council, Seaforth-street, Waterloo, Blyth. Sealed tenders, endorsed "Tender for Street Work," must be delivered not later than 4 p.m. on May 10.

MAY 10.—HACKNEY.—ROADS.—Hackney Borough Council invite tenders for the kerbing, channelling, paving, making-up, etc., of Rock-road, Clapton Park. The general conditions of contract and the specification and plan and sections may be inspected, and copies of the bill of quantities, and form of tender obtained on application to Mr. Norman Scorgie, M.Inst.C.E., Borough Engineer and Surveyor, and on payment of the sum of 1*l.* 1s. Tenders, sealed and endorsed "Rock-road," must be delivered at the Town Hall, Hackney, N.E., not later than 5 p.m. on May 10.

MAY 10.—MIRFIELD.—SEWAGE TANKS, ETC.—Concrete sewage tanks and filter beds, etc., at Hopton Mills, Mirfield. Plans and specifications may be seen, and bills of quantities obtained, at Dewsbury Offices, of Messrs. John Kirk & Sons, architects, from May 3 to May 10, on which latter day tenders are to be delivered before 3 o'clock p.m.

MAY 11.—CORK.—PAVING.—Cork County Borough Council invite tenders for paving with compressed asphalte the carriageway of Winthrop-street. Forms, etc., from the City Engineer's Office, Municipal-buildings, from 10 to 4 o'clock daily. Sealed tenders may be lodged at office of Mr. F. W. M'Carthy, Town Clerk, Municipal-buildings, up to 1 o'clock p.m. on May 11, endorsed, "Tender for Asphalting Winthrop-street." The concrete bed will be laid and prepared to receive the asphalte by the Corporation.

* MAY 14.—ACTON.—NEW SEWERS.—The Acton U.D.C. invite tenders for construction of three and three-quarter miles of sewers, varying from 6 in. to 6 ft. in diameter, 2½ acres of filter beds and works connected therewith. Instructions for tender and form of tender, with the form of contract and schedules annexed, can be obtained, and drawings inspected, at office of Sir Alex. Binnie & Sons, 9, Great George-street, Westminster, on payment of 2*l.* Tenders, inclosed in sealed cover, and addressed in manner provided in the instructions for tender, must be received at the offices of the Clerk to the Acton U.D.C., 242, High-street, Acton, before May 14.

MAY 14. — CINDERFORD. — OUTFALL WORKS. — The R.D.C. of East Dean and United Parishes invite tenders for alterations and additions to the Soudley Outfall Works. Plans, etc., may be seen, and other particulars obtained, on application at the office of Mr. Wm. Whitehouse, Surveyor, Surveyor's Office, Belle Vue-road, Cinderford. Tenders to be sent to Mr. M. F. Carter, Clerk to the Council, Newnham, Glos., on or before May 14, not later than 10 a.m.

* MAY 14.—ENFIELD.—SEWAGE DISPOSAL.—The Cheshunt U.D.C. invite tenders for the construction of an addition to existing engine-house, a tank, No. 4 filters, the supply and erection of engines and centrifugal pumps in duplicate, the laying out of land, together with all necessary carriers, mains, etc., at sewage disposal works at Enfield, Middlesex. Drawings and specifications may be seen on and after April 30 at the offices of the Engineers, Messrs. Pollard & Tingle, 31, Old Queen-street, Westminster, and at the Council offices. Form of tenders obtained only from Clerk to Council upon deposit of 5*l.* Bills of quantities can only be obtained from the engineers upon production of the form of tender. Sealed tenders, addressed to the Chairman of Council, indorsed "Sewage Disposal," to be delivered at the Council's offices before four on May 14.

MAY 14.—HANLEY.—SEWERS AND ROADS, ETC.—Hanley Corporation invite tenders for :—(1) Sewers for the diversion of mine water, Etruria Canal Bridge to Bell's Mill Pool; (2) two 10-in. centrifugal pumps for the sewage works; (3) Private street improvement works: Contract No. 364, Waterloo-street; contract No. 365, Commercial-road; contract No. 366, Eagle-street; Contract No. 367, Passages off Albert-street; contract No. 368, Back Stedman-street; contract No. 369, Back Bucknall-road North; contract No. 370, Back Mulbery-street; contract No. 371, Back Bucknall-road South; contract No. 372, Back Homer-street West; contract No. 373, Back Homer-street East; contract No. 374, Back Seymour-street; contract No. 375, Back Jasper-street. Forms, etc., may be obtained, and plans inspected, at office of Mr. Joseph Lobley, Borough Engineer and Surveyor, Town Hall, Hanley. Separate sealed and endorsed tenders must be sent before Monday night, May 14.

MAY 14.—MORLEY.—PIPE SEWER.—Morley Highways Committee invite tenders for the laying of about 1,080 lin. yds. of 15-in. earthenware pipe sewer in Wide-lane and Bantam Grove-lane, within the borough. Specifications, etc., obtained, and plans may be seen, at office of Mr. W. E. Putman, Assoc.M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Morley. Tenders, sealed and endorsed, "Wide-lane Sewer," to be delivered at the Town Clerk's Office, Town Hall, Morley, not later than 10 a.m. on May 14.

MAY 21.—CAVAN.—SEWERAGE, CISTERN, ETC.—Cavan (Ireland) Board of Guardians, at their meeting on May 22, will consider tenders for providing new closets and large cistern, and carrying out the new system of sewerage on the Workhouse premises, in accordance with the specification and plans prepared by Mr. Thomas O'Brien. The names and addresses

of two solvent sureties to be given. Tenders to be sent by post, prepaid and registered, and to bear the Cavan postmark, not later than May 21. Joseph D. Grier, Clerk of Union.

MAY 23.—LADYBANK.—SEWERAGE.—Ladybank Town Council invite tenders for the construction of sewerage and drainage works, comprising the laying of fireclay pipes, the building of manholes, flushers, septic tanks, bacteria filter beds, and other relative works. Drawings may be seen and form, etc., obtained, after Wednesday, May 9, from Messrs. Bruce, Proudfoot, & Macrae, C.E., Cupar, upon payment of 2l. 2s. Contractors who have obtained a copy of the specification and schedule will be shown the proposed line of sewers, etc., on Monday, May 14, starting from Ladybank Station at 11 o'clock a.m. The tender must be delivered in a sealed cover to Mr. J. L. Anderson, Town Clerk, Cupar, and marked "Ladybank Sewerage," by 10 o'clock on the morning of May 23.

NO DATE.—HONITON.—SCAVENGING, ETC.—For scavenging and sanitary services at Honiton Militia Camp. Apply to the Officer Commanding, Army Service Corps, Higher Barracks, Exeter, from whom terms of tender and all information can be obtained.

## STONE, MATERIALS, AND STORES.

MAY 8.—WINSFORD.—STONE.—Winsford U.D.C. invite tenders for the supply and delivery of stone for roads during the period ending March 31, 1907, as follows:—800 tons, more or less, of granite macadam, broken to pass a 1½-in. gauge; 60 tons, more or less, clean granite chippings, broken to pass ¾-in. gauge; 40 tons, more or less, granite chippings, broken to pass ½-in gauge; 40 tons, more or less, 4-in. granite cubes or setts. To be delivered free on either of the Council's wharves below Winsford Bridge, as may be directed, or alternately on the Council's Dockyard wharf above the bridge. Forms of tender and further particulars may be obtained from Mr. James Wilkinson, surveyor, Winsford. Sealed tenders, marked "Road Stone," to be delivered to Mr. John H. Cooke, Clerk, District Council Offices, Winsford, not later than 9 a.m., May 8, and samples of the materials proposed to be supplied must be delivered at the same time to the Surveyor's offices.

MAY 9.—HAWARDEN.—STONES.—Hawarden R.D.C. invite tenders for the supply of road stones for the maintenance of roads within the district, for the year ending March 31, 1907. The stones to be broken so as to pass through 1½ in. to 2 in. gauges, of equal quality, free from dirt, and delivered, as required, at the following stations:—Hope Village, Buckley Junction, Buckley (old station), Hawarden, Knowle-lane, and Watkinson's sidings (Wrexham, Mold, and Connah's Quay Railway), Kinnerton, Broughton Hall, Sandycroft, Queen's Ferry (L. and N.W. Railway), and Rossett (G.W. Railway). Tenders are also invited for the carting of stones from the various stations, quarries, and gravel pits. Forms of tender, etc., may be had on application to the District Surveyor, Mr. Wm. Newton, Drury, Buckley, Chester. Sealed tenders to be delivered on or before May 9 to Mr. Hugh G. Roberts, Clerk of the Council, Council Offices, Broughton, near Chester, endorsed, "Tender for Materials" or "Cartage."

MAY 10.—MELFORD.—ANNUAL CONTRACTS.—Melford R.D.C. invite tenders for the supply of the undermentioned materials, etc., as may be required during the year ending March 31, 1907:—Broken granite; glazed sanitary drain-pipes, 4 in. to 42 in. diameter; blue Staffordshire bricks and kerbs; York stone kerb; Portland cement; granite concrete flags; flints; chalk; road grates and frames; team labour; tools, steam rolling. Forms of tender and other information may be obtained from Mr. Wm. Carver, C.E., Surveyor, 3, Melford-road, Sudbury, Suffolk. Sealed tenders to be sent in not later than May 10, addressed to Mr. H. C. Canham, Clerk, 68, Friars-street, Sudbury, Suffolk.

MAY 14.—ROMFORD.—ROAD MATERIAL.—Romford R.D.C. invite tenders for the supply of 800 tons of best quality blue Guernsey granite, broken to 2 in. cube, and 20 tons of best quality blue Guernsey granite, broken to 1½ in. cube; also 400 tons of Rhenish basalt stone, broken to 2 in. cube. Specification and form of tender may be obtained from Mr. George Lapwood, Highways Surveyor, Victoria-chambers, Romford. Sealed tenders, endorsed "Tender for Granite, etc.," together with samples of granite and stone proposed to be supplied, which must be sent carriage paid, to Mr. William Smith, Clerk to the Council, 13, North-street, Romford, on or before May 14.

MAY 15.—STOCKTON.—WHINSTONE AND SLAG.—Stockton R.D.C. invite tenders for the supply of broken and unbroken whinstone and slag for the current year. Specifications and forms of tender may be obtained on application to Mr. W. Burton, Highway Surveyor, Billingham, Stockton-on-Tees, and tenders, marked "Tenders for Materials," must be sent to Mr. T. H. Faber, Clerk, Stockton-on-Tees, not later than 12 noon, on May 15.

MAY 19.—HOYLAND NETHER.—ROAD MATERIALS.—Hoyland Nether U.D.C. invite tenders for the supply and delivery of the following road materials for the year ending March 31, 1907:—Unbroken slag; broken slag; granite; blue limestone; tar macadam; whinstone; also for brooms, picks, shovels, etc. The Council are also prepared to receive tenders for carting. Form, etc., may be obtained on application to Mr. H. G. Keywood, surveyor, Town Hall, Hoyland Nether, near Barnsley. Sealed tenders, endorsed "Tender for——," addressed to the Chairman of the Highways Committee, must be delivered not later than May 19.

MAY 21.—STEVENAGE.—GRANITE.—Stevenage U.D.C. invite tenders for the supply of 1,000 tons (more or less, as may be required) of 1½ in. to 2 in., 1½ in. to 1¾ in., and 1 in. to 1¼ in. broken Guernsey, Leicester, or other granite for the repair of the roads in the district, to be delivered at Stevenage Railway Station and sidings (G.N.R.) as and when required up to March 31 next. Sealed tenders, endorsed "Tender for Granite," accompanied by samples, to be delivered to Mr. Wm. Onslow Times, Clerk to the Council, U.D.C. Offices, Stevenage, not later than 4 o'clock on May 21.

MAY 22.—SCUNTHORPE.—GRANITE.—Scunthorpe U.D.C. invite tenders for the supply of granite, 1½ in. and 1¾ in. gauge, and slag, 1½ in. and 2 in. gauge, and slag screenings, free to Scunthorpe or Gunhouse stations of the Great Central Railway, to be forwarded to either station, and in such quantities as may from time to time be ordered by the Council. Probable quantities, granite, 580 tons; slag, 1,100 tons; and slag screenings, 20 tons. Particulars to be obtained from Mr. W. F. Bickford, Surveyor to the Council. Tenders, with samples, to be sent in not later than 6 o'clock in the evening of May 22, to Mr. Frank C. Hett, Clerk, at the Council's Offices, No. 2, Trafford-street, Scunthorpe.

# Public Appointments.

| Nature of Appointment. | By whom Advertised. | Salary. | Applications to be in |
|---|---|---|---|
| *ROAD FOREMAN | Gold Coast P.W. Department | 250l., etc. | May 14 |
| *ASSISTANT SURVEYOR | Hanley Corporation | 150l. | May 21 |
| *JNR. DRAUGHTSMAN (ESTATES AND VALUATION DEPT.) | London County Council | Not stated | No date |

# Auction Sales.

| Nature and Place of Sale. | By whom Offered. | Date of Sale. |
|---|---|---|
| *FREEHOLD BUILDING ESTATE, ALDERSHOT—At the Mart | Driver, Jonas, & Co. | May 8 |
| *SURPLUS PLANT AND STOCK, TOTTENHAM—At Works, Hampden-road, Tottenham | Fuller, Horsey, Sons, & Cassell | do. |
| *BUILDING MATERIALS, GROSVENOR ESTATE, W.—On the Premises | White, Berry, & Taylor | do. |
| *DEALS, BATTENS, ETC.—Great Hall, Winchester House, Old Broad-street, E.C | Churchill & Sim | May 9 |
| *FREEHOLD BUILDING LAND, NEW SOUTHGATE, ETC.—"Orange Tree," New Southgate | W. Maurice-Jones | May 14 |
| *FREEHOLD BUILDING PLOTS, EPPING, ESSEX—At the "Cock Hotel," Epping | Douglas Young & Co. | May 16 |
| *FREEHOLD BUILDING SITE, STRATFORD—At the Mart | Fuller, Horsey, Sons, & Cassell | May 22 |
| *FREEHOLD BUILDING ESTATE (PARK ROYAL), WILLESDEN—At the Mart | Debenham, Tewson, & Co. | do. |
| *BUILDING SITE, DERING-STREET, OXFORD-STREET, W.—At the Mart | Garrett, White, & Poland | do. |
| *BUILDING LEASE, MARSHALL-STREET, SOHO, W.—At the Mart | Garrett, White, & Poland | do. |
| *CONTRACTOR'S PLANT AND MACHINERY, SOUTHAMPTON—Depôt, Southampton | Fuller, Horsey, Sons, & Cassell | May 23 |
| *FREEHOLD ESTATE, CRAYFORD, KENT—At the Mart | Douglas Young & Co. | do. |
| *FREEHOLD BUILDING LAND, THORNTON HEALH—At the Mart | Daniel Watney & Sons | May 24 |
| *FREEHOLD ESTATE, SUNBURY-ON-THAMES—At the Mart | Buckland & Sons | May 28 |
| *SHOP PROPERTY, OXFORD-ST., MANCHESTER—Thatched House Hotel, Manchester | Farebrother, Ellis, Egerton, Breach, Galsworthy, & Co. | May 29 |
| *FREEHOLD CEMENT WORKS, DOVERCOURT—At the Mart | Debenham, Tewson, & Co. | do. |
| *FREEHOLD BUILDING ESTATE, FELTHAM, MIDDLESEX—On the Estate | Mr. Woods | May 30 |

PATENTS.—*Continued from page* 502.

1,210 of 1906.—R. WAKE: *Fastening for Doors and the like.*

This relates to a fastening for doors and the like, consisting of a bar or bolt of any suitable shape and section, having one or more slots in it, which are designed to fit over or on to lugs or clips fastened in any suitable manner to the door or the like or its frame, said clips being bevelled or sloped and engaging with the ends of the said slots, which are also sloped for the purpose of drawing the bar or bolt and the lugs tightly together to lock the door, the edge of the bar or bolt alongside the said slots being of such a shape, and fitting in the said clip, as to form a pivot or hinge for the bar or bolt, which can be thrust up to release the said bevelled or sloped parts, and can then be turned on the clips away from the door, leaving it free to be opened, said clips and bar being always in engagement with each other.

2,214 of 1905.—M. FAWCETT: *A Cowl for Chimneys, Ventilating Shafts, and the like.*

This relates to the construction of cowls for chimneys, ventilating shafts, and the like, consisting of a lower truncated cone part inclined upwards and inwards, provided with projecting V-shaped ribs extending inwards and supporting a cover disposed on the upper side and flat on the underside, leaving lateral passages for the ingress and egress of wind across the mouth of the chimney.

14,709 of 1905.—G. H. WALDEN: *An Asphaltic Cement.*

This relates to an asphaltic cement manufactured by mixing 10 grains of marl, 2 grains of coal, 4 grains of shale, and 10 grains of fireclay, or any other quantity of these materials in the same proportions, intimately together, drying this mixture well over a slow fire, grinding it into a fine powder, adding to this powdered mixture the necessary quantity of gas-tar, and stirring and mixing the whole together so as to form a paste, which is ready for use, to cover stone, wood, or brickwork.

21,527 of 1905.—F. MELAUN: *Method of Producing Openings in Concrete or like Pavement.*

This relates to a method of producing holes or channels in concrete pavement, by applying compressed air chisels in such a manner that the holes or channels, even when of small size, present sharply outlined sections and plain sides, and that destruction of the concrete over a larger surface than is necessary is avoided.

1,325 of 1906.—A. A. V. POULSEN: *Preservation of Wood.*

This consists in the method of preserving wood consisting in loosely applying to its surface or driving into it pieces or nails of a metal which, under the action of the atmospheric or other moisture, will be transformed into a soluble metallic salt which will soak into the wood.

## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

| | |
|---|---|
| **April 19.—By COOPER & PREECE (at Ross).** | |
| Marstow, Hereford.—"Trebandy Farm," 197 a. 2 r. 0 p., f., p. | £2,850 |
| **April 20.—By E. J. CARTER (at Tunbridge Wells).** | |
| Goudhurst, Kent.—"Pleasant Pl." and 18 acres, f., p. | 2,600 |
| **April 23.—By J. M. & R. BALLS.** | |
| Halstead, Essex.—20, North-st. (s.), with off-licence, f., y.r. 6l. 14s. 4d. | 100 |
| Wickham St. Paul's, Essex.—A freehold off-licensed beer-house, with blacksmith's shop, y.r. 5l. | 105 |
| Bulmer, Essex.—Freehold off-licensed beer-house and shop, y.r. 9l. | 200 |
| Two freehold cottages, w.r. 10l. 8s. | 100 |
| Little Yeldham, Essex.—Copyhold house and shop, with off-licence; also a cottage, y.r. 6l. 12s. | 235 |
| **By BEALE & CAPPS.** | |
| Hyde Park.—28, Oxford-ter., u.t., 24 yrs., g.r. 9l., y.r. 100l. | 850 |
| **By MAPLE & Co.** | |
| Hampstead.—20, Kemplay-rd., f., y.r. 55l. | 800 |

By J. & R. KEMP & Co.

Wandsworth.—15 and 17, Ferrier-st., u.t. 73 yrs., g.r. 10*l*., w.r. 62*l*. 8s. ..... £395
6 and 7, Edgel-st., u.t. 73 yrs., g.r. 10*l*., w.r. 62*l*. 8s. ..... 400
Finsbury.—16, Finsbury-market (s.), f., y.r. 40*l*. ..... 670
Finsbury-market, f.g.r. 6*l*. 16s., reversion in 2½ yrs. ..... 640
Peckham.—Blenheim-gr., f.g.r. 12*l*. 10s., reversion in 46½ yrs. ..... 360
Woolwich, Kent.—38, Church-st (s.), f., y.r. 28*l*. ..... 290
14, Warwick-st., f., p. ..... 230
404 and 406, Woolwich-road, u.t. 66¼ yrs., g.r. 6*l*. 15s., w.r. 42*l*. 18s. ..... 310
Camden Town.—140, Camden-st., u.t. 31½ yrs., g.r. 8*l*., p. ..... 410

By JENKINS, SONS, & Co.

Brockley.—7, Wickham-rd., u.t. 53½ yrs., g.r. 7*l*., e.r. 55*l*. ..... 570
159, Brockley-rd., u.t. 58½ yrs., g.r. 4*l*. 15s., e.r. 40*l*. ..... 305
Forest Hill.—"Fair View," Canonbie-rd., u.t. 95 yrs., g.r. 8*l*. 8s., e.r. 55*l*. ..... 600

By MAY & PHILPOT.

Clapham.—45, Park Hill, f., p. ..... 1,400

April 24.—By H. J. BROMLEY.

Thornton Heath.—3, Osborne-rd., f., p. ..... 415

By DEBENAM, TEWSON, & Co.

Balls Pond.—52, 53, and 54, Stanley-rd., u.t. 45½ yrs., g.r. 11*l*. 5s., y.r. 90*l*. ..... 850

By GARRETT, WHITE, & POLAND.

Oxford-street.—7, Dering-st. (business premises), corporation lease, g.r. 2*l*. 5s., fine 15*l*. 15s. w.r. 114*l*. 8s. ..... 2,500

By J. W. JONES.

South Kensington.—51, Cathcart-rd., u.t. 42½ yrs., g.r. 13*l*., e.r. 80*l*. ..... 450

By NORMAN & SON.

Leytonstone.—465, High-rd. (s.), u.t. 58 yrs., g.r. 6*l*. 10s., y.r. 36*l*. ..... 440

By ORGILL, MARKS, & BARLEY.

Tottenham Court-road.—Nos. 234, 235, and 236, the "Bedford Head Hotel," also 11 to 15, Bayley-st., u.t. 54 and 48½ yrs., y.r. 620*l*., with goodwill ..... 27,200
Highbury.—12, Highbury New-pk., u.t. 43½ yrs., g.r. 15*l*., e.r. 100*l*. ..... 450

By RUTTERS'.

Ash, etc. Kent.—Portions of "Pettings Farm Estate," 125 a. 2 r. 28 p., f. (in lots) ..... 3,530

By FREDK. WARMAN.

Highbury.—54, Avenell-rd., u.t. 72 yrs., g.r. 7*l*. 10s., e.r. 42*l*. ..... 410
Crouch End.—102, Park-rd., u.t. 47 yrs., g.r. 7*l*. 8s., w.r. 35*l*. 2s. ..... 175

By LEE & FARR (at Slough).

Farnham Royal, Bucks.—Main rd., an enclosure of building land, 24 acres, c. ..... 1,445

By BOYTON, SONS, & Co. (at Fulham).

Fulham.—59, Winchendon-rd., u.t. 87 yrs., g.r. 7*l*., y.r. 40*l*. ..... 445
89, Gowan-av., u.t. 85 yrs., g.r. 5*l*. 19s., w.r. 44*l*. 4s. ..... 300

By J. C. PLATT (at Hammersmith).

Hammersmith.—5, Bridge-av., u.t. 36 yrs., g.r. 5*l*. 5s., e.r. 42*l*. ..... 400
7, Luxemburg-gdns., f., e.r. 65*l*. ..... 1,000

April 25.—By GREEN & SON.

Gunnersbury.—10, Thorney Hedge-rd., f., e.r. 48*l*. ..... 590

By E. H. HENRY.

Battersea.—2, 4, 6, 8, 12 to 28 (even), Ingelow-rd., u.t. 72½ yrs., g.r. 63*l*. 4s. 6d., w.r. 465*l*. 8s. 3,480

By J. M. RICHARDSON.

Kilburn.—26, Willesden-la. (s.), u.t. 87½ yrs., g.r. 14*l*. 14s., e.r. 65*l*. ..... 440

By TYLER & Co.

Paddington.—7, Barnsdale-rd., u.t. 56½ yrs., g.r. 8*l*., w.r. 88*l*. 8s. ..... 450
Frinton-on-Sea, Essex.—Second-av., four freehold building plots. ..... 600

By DOUGLAS YOUNG & Co.

Bermondsey.—Shad Thames, "Ray's Coal Wharf," area 10,200 ft., u.t. 12 yrs., g.r. 60*l*. y.r. 600*l*. ..... 1,700
Kilburn.—13 to 23 (odd), Eresby-rd., u.t. 76 yrs., g.r. 45*l*., w.r. 434*l*. 4s. ..... 2,100
Shepherd's Bush.—276, Uxbridge-rd., f., y.r. 60*l*. ..... 930
Chelsea.—423, King's-rd (s.), f., y.r. 55*l*. ..... 810
11, Oakley-cres., u.t. 47 yrs., g.r. 6*l*., y.r. 45*l*. 420
Tottenham.—112 and 126, Park-la. (s.), f., y.r. 66*l*. ..... 850
130 and 132, Park-la., f., y.r. 50*l*. ..... 500
Clapham.—23 and 25, Clarence-st., u.t. 35 yrs., g.r. 14*l*., w.r. 104*l*. ..... 380

By DYER, SON, & HILTON.

Finchley.—1, 3, 5, and 7, Torrington-pk., u.t. 59½ yrs., g.r. 28*l*., y.r. 165*l*. ..... 915
21, Torrington-pk., u.t. 59½ yrs., g.r. 11*l*., y.r. 75*l*. ..... 600
New Southgate.—7, Lower Park-rd., f., y.r. 30*l*. 250
Wood Green.—280 to 286 (even), High-rd. (s.), f., y.r. 250*l*. ..... 3,880
Muswell-hill.—94 and 96, Palace Gates-rd., f., y.r. 69*l*. ..... 715
Canonbury.—66, Grosvenor-rd., u.t. 43¼ yrs., g.r. 8*l*. 8s. ..... 420
Covent-garden.—27, New-st. (s.), u.t. 87 yrs., g.r. 50*l*., y.r. 110*l*. ..... 960
Blackheath.—70 and 72, Lee-rd., u.t. 52 yrs., g.r. 24*l*., e.r. 135*l*. ..... 460

By A. BURTENSHAW & SON (at Hailsham).

Hailsham, Sussex.—2, 4, 6, and 8, London-rd., f. 815
London-rd., a corner building plot, f. ..... 200
North-st., "The Laurels," and 0 a. 2 r. 10 p., f. and c. ..... 1,500
30, 32, and 34, North-st., f. ..... 1,430
Hurstmonceux, Sussex.—Three meadows and farm buildings, 16 a. 2 r. 13 p., f. ..... 510
"The Right Acres," 8 a. 1 r. 32 p., f. ..... 300
Gardner-st., a freehold house ..... 640
Hurstmonceux allotment fields, 12 a. 2 r. 16 p. 450

April 25.—By SEDGWICK, SON, & WEALL (at Pinner).

Pinner.—Paines-la., etc., 24 freehold building plots ..... 3,410

April 26.—By H. J. BLISS & SONS.

Victoria Park.—126, Grove-rd., u.t. 38 yrs., g.r. 6*l*., y.r. 42*l*. ..... £310

By OAKLEY FISHER & Co.

Kentish Town.—Vicars-rd., i.g. rents 35*l*. 10s., u.t. 60 yrs., g.r. 8*l*. 10s. ..... 530
St. Pancras.—125, Drummond-st., u.t. 13½ yrs., g.r. 15*l*. y.r. 40*l*. ..... 175
Paddington.—77, Chippenham-mews, u.t. 57 yrs., g.r. 3*l*. 10s., e.r. 30*l*. ..... 180

By E. J. GILDERS.

Camberwell.—215, Coldharbour-la. (s.), f., p. ..... 1,440
Flodden-rd., "Clifton Lodge," u.t. 48 yrs., g.r. 12*l*., y.r. 70*l*. ..... 650

By E. HOLSWORTH.

Forest Hill.—1, 3, and 5, Sunderland-rd. (s.), u.t. 46½ yrs., g.r. 5*l*., y.r. 145*l*. ..... 1,680

By C. C. & T. MOORE.

Mile End.—Jupp's-rd., i.g.r. 259*l*. 10s., u.t. 42 yrs., g.r. 40*l*. ..... 3,300
1 to 7, Jupp's-rd., u.t. 42 yrs., g.r. nil, w.r. 131*l*. 6s. ..... 720
8 and 9, Jupp's-rd u.t. 42 yrs., g.r. nil, w.r. 111*l*. 16s. ..... 500
17, 21, 23, and 26, Whitman-rd., u.t. 42 yrs., g.r. nil, w.r. 109*l*. 4s. ..... 600
15, Whitman-rd., f., w.r. 28*l*. 12s. ..... 240
Longfellow-rd., f.g.r. 5*l*., reversion in 72 yrs. 115

By NEWBON, SHEPHERD, & EDWARDS.

Deptford.—19, Reculver-rd. (s.), u.t. 69½ yrs., g.r. 6*l*., y.r. 40*l*. ..... 300
Islington.—1 and 3, Henshall-st. (s.), u.t. 15 yrs., g.r. nil, y.r. 60*l*. ..... 230
Finsbury Park.—17, Woodstock-rd., u.t. 61 yrs., g.r. 6*l*. 10s., e.r. 44*l*. ..... 300
Stoke Newington.—4, 6, 8, and 12, Pellerin-rd., u.t. 67 yrs., g.r. 29*l*. 8s., y.r. 140*l*. ..... 1,350
Hackney.—42, Bodney-rd., u.t. 69½ yrs., g.r. 8*l*. 10s., y.r. 50*l*. ..... 500
Harringay.—519, Green-la. (s.), u.t. 89 yrs., g.r. 15*l*., y.r. 80*l*. ..... 955
Crouch End.—6, Park-av. south, u.t. 93 yrs., g.r. 8*l*. 8s., e.r. 46*l*. ..... 460

By RUTLEY, SON, & VINE.

Oxford-street.—9, Gee's-ct. (s.), area 560 ft., f., p. 660
Kentish Town.—62, Carlton-rd., u.t. 44½ yrs., g.r. 6*l*. 6s., y.r. 34*l*. ..... 305
Tottenham Court-road.—62, Whitfield-st., u.t. 22½ yrs., g.r. 32*l*., w.r. 115*l*. 14s. ..... 235
St. Pancras.—94, Chalton-st. (s.), u.t. 21½ yrs., g.r. 16*l*., w.r. 85*l*. 16s. ..... 325
Hampstead-road.—71, William-st., u.t. 17½ yrs., g.r. 5*l*. 10s., w.r. 81*l*. 18s. ..... 250

By STIMSON & SON.

Chelsea.—Cheyne-row, f.g.r. 35*l*., reversion in 31 yrs. ..... 1,120
Lawrence-st., "Lord Palmerston" b.h., f.g.r. 6*l*., reversion in 31 yrs. ..... 280
Lawrence-st., f.g.r. 19*l*., reversion in 31 yrs. ... 860
Kingston, Surrey.—4, Beaufort-rd., u.t. 68½ yrs., g.r. 7*l*. 10s., y.r. 50*l*. ..... 420
38, Beaufort-rd., u.t. 75 yrs., g.r. 7*l*. 10s., y.r. 60*l*. ..... 520
1, Fassett-rd., f., y.r. 60*l*. ..... 700
7 and 9, Fassett-rd., u.t. 68½ yrs., g.r. 15*l*., y.r. 102*l*. 10s. ..... 845
11, Grove-cres., f., y.r. 45*l*. ..... 600
Dulwich.—41, Gowlett-rd., f., e r. 34*l*. ..... 450
Overhill-rd., "Campfield" and 1 a., f., p. ..... 600
Camberwell.—10, 11, 12, and 15, McDo well-rd., u.t. 69½ yrs., g.r. 8*l*., y.r. 144*l*. ..... 1,570
Shepherd's Bush.—27, Caxton-rd., f., y.r. 40*l*. 570
Whitechapel.—8 and 9, Union-st., f., w.r. 122*l*. 4s. ..... 820
3 to 6, Mulberry-st., f., w.r. 351*l*. ..... 2,750

By HENRY HENDRIKS (at Birmingham).

Small Heath, Worcester.—117, Green-la., area 1,687 yds., f., p. ..... 795

April 27.—By C. RAWLEY, CROSS, & Co.

Kensington.—65, Holland-rd., f., e.r. 100*l*. ... 1,150

By C. W. DAVIES & SON.

Islington.—16, 18, and 20, Grosvenor-st., f., e.r. 81*l*. ..... 600
Holloway.—1, 3, and 5, Ringcroft-st., u.t. 38 yrs., g.r. nil, y.r. 110*l*. ..... 900
King's Cross.—25, Argyle-st., u.t. 36½ yrs., g.r. 10*l*., y.r. 50*l*. ..... 425

By PROTHEROE & MORRIS.

Leyton.—Crawley-rd., a block of building land, f. ..... 445
Leytonstone.—35, Mornington-rd., f., p. ..... 325

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; l.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

## MEETINGS.

SATURDAY, MAY 5.

*Royal Institution.*—Professor C. Waldstein on "English Furniture in the XVIIIth century."—II. 3 p.m.
*Edinburgh Architectural Association.*—Visit to Newbattle Abbey, Dalkeith, N.B.
*Northern Architectural Association.*—Excursion meeting. Members to assemble at 3 p.m., in the portico of the Central Station, Newcastle, and proceed to the New High Level Bridge. After inspecting the works, the new dining-rooms in Scotswood-road and the new drawing offices at Elswick Works will be visited.
*Municipal and County Engineers' Association.*—Eastern District meeting, Newmarket. 11 a.m.

MONDAY, MAY 7.

*Royal Institute of British Architects.*—Annual general meeting. 8 p.m.
*Society of Engineers.*—Mr. David Sommerville, B.A., M.D., on "The Chemistry and Bacteriology of Potable Waters." 7.30 p.m.
*Society of Arts (Cantor Lecture).*—Mr. A. Maskell on "Ivory."—III. 8 p.m.

TUESDAY, MAY 8.

*Institute of Sanitary Engineers (Students' Lectures).*—Dr. J. Priestley on 'Sanitary Law."—II. 7 p.m.
*Society of Arts (Applied Art Section).*—Mr. Sherard Cowper-Coles on "Damasceening, and the Inlaying and Ornamenting of Metallic Surfaces." 8 p.m.

WEDNESDAY, MAY 9.

*Royal Sanitary Institute.*—The Institute Dinner, Langham Hotel, Portland-place, W. 7 p.m.
*Society of Arts.*—Professor T. Oliver on "Bridge Building by means of Caissons, including remarks upon Compressed Air Illness." 8 p.m.

THURSDAY, MAY 10.

*Royal Institution.*—The Rev. J. P. Mahaffy on "The Expansion of Old Greek Literature by Recent Discoveries." 5 p.m.
*Carpenters' Hall, London-Wall (Lectures on Carpentry and Joinery).*—Mr. J. Bartlett on "Shoring, Timber Framing, and Floors." 7.30 p.m.
*Institution of Electrical Engineers.*—Adjourned discussion on paper by Mr. L. Andrews, Member, on "Long Flame Arc Lamps." 8 p.m.

FRIDAY, MAY 11.

*Royal Institution.*—Professor J. H. Poynting on "Some Astronomical Consequences of the Pressure of Light" 9 p.m.
*Junior Institution of Engineers.*—Mr. Adam Hunter on "The Structural Design of Factories." 8 p.m.
*Association of Engineers-in-Charge.*—Annual meeting. 8 p.m.

SATURDAY, MAY 12.

*Royal Institution.*—Professor C. Waldstein on "English Furniture in the XVIIIth century"—III. 3 p.m.
*Edinburgh Architectural Association.*—Associates' morning visit to St. Andrew Steel Works.


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## PRICES CURRENT OF MATERIALS.

**** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

| | £ | s. | d. | |
|---|---|---|---|---|
| Hard Stocks | 1 | 8 | 0 | per 1000 alongside, in river. |
| Rough Stocks and Grizzles | 1 | 5 | 0 | " " " |
| Picked Stocks for Facings | 2 | 15 | 0 | " delivered. |
| Flettons | 1 | 6 | 0 | " at railway depôt. |
| Red Wire Cuts | 1 | 12 | 0 | " " " |
| Best Fareham Red | 3 | 12 | 0 | " " " |
| Best Red Pressed Ruabon Facing | 5 | 0 | 0 | " " " |
| Best Blue Pressed Staffordshire | 3 | 15 | 0 | " " " |
| Do. Bullnose | 4 | 0 | 0 | " " " |
| Best Stourbridge Fire Bricks | 3 | 14 | 0 | " " " |
| GLAZED BRICKS. | | | | |
| Best White and Ivory Glazed Stretchers | 12 | 0 | 0 | " " " |
| Headers | 11 | 0 | 0 | " " " |
| Quoins, Bullnose, and Flats | 16 | 0 | 0 | " " |
| Double Stretchers | 19 | 0 | 0 | " " " |
| Double Headers | 16 | 0 | 0 | " " " |
| One Side and two Ends | 19 | 0 | 0 | " " " |
| Two Sides and one End | 20 | 0 | 0 | " " " |
| Splays, Chamferred, Squints | 20 | 0 | 0 | " " " |
| Best Dipped Salt Glazed Stretchers, and Header | 12 | 0 | 0 | " " " |
| Quoins, Bullnose, and Flats | 14 | 0 | 0 | " " " |
| Double Stretchers | 15 | 0 | 0 | " " " |
| Double Headers | 14 | 0 | 0 | " " " |
| One Side and two Ends | 15 | 0 | 0 | " " " |
| Two Sides and one End | 15 | 0 | 0 | " " " |
| Splays, Chamferred, Squints | 14 | 0 | 0 | " " " |
| Second Quality White and Dipped Salt Glazed | 2 | 0 | 0 | " less than best. |

| | s. | d. | |
|---|---|---|---|
| Thames and Pit Sand | 6 | 9 | per yard, delivered. |
| Thames Ballast | 5 | 3 | " " |
| Best Portland Cement | 25 | 0 | per ton, " |
| Best Ground Blue Lias Lime | 19 | 0 | " " |

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

| | s. | d. | |
|---|---|---|---|
| BATH STONE—delivered on road waggons, Paddington Depôt | 1 | 6½ | per ft. cube. |
| Do. do. delivered on road waggons, Nine Elms Depôt | 1 | 8½ | " " |
| PORTLAND STONE (20 ft. average)— | | | |
| Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf | 2 | 1 | " " |
| White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf | 2 | 2½ | " " |

## STONE (*continued*).

| | s. | d. | |
|---|---|---|---|
| Ancaster in blocks | 1 | 10 | per ft. cube, deld. rly. depôt. |
| Beer ,, | 1 | 6 | ,, ,, |
| Greenshill ,, | 1 | 10 | ,, ,, |
| Darley Dale in blocks | 2 | 4 | ,, ,, |
| Red Corsehill ,, | 2 | 2 | ,, ,, |
| Closeburn Red Freestone | 2 | 0 | ,, ,, |
| Red Mansfield ,, | 2 | 4 | ,, ,, |
| YORK STONE—*Robin Hood Quality.* | | | |
| Scappled random blocks. | 2 | 10 | ,, ,, |
| 6 in. sawn two sides landings to sizes (under 40 ft. super.) | 2 | 3 | per ft. super., ,, |
| in. rubbed two sides ditto, ditto | 2 | 6 | ,, ,, |
| in. sawn two sides slabs (random sizes) | 0 | 11½ | ,, |
| in. to 2½ in. sawn one side slabs (random sizes) | 0 | 7½ | ,, ,, |
| in. to 2 in. ditto, ditto | 0 | 6 | ,, ,, |
| HARD YORK— | | | |
| Scappled random blocks. | 3 | 0 | per ft. cube, ,, |
| in. sawn two sides landings to sizes (under 40 ft. super.) | 2 | 8 | per ft. super., ,, |
| 6 in. rubbed two sides ditto | 3 | 0 | ,, ,, |
| 3 in. sawn two sides slabs (random sizes) | 1 | 2 | ,, ,, |
| in. self-faced random flags | 0 | 5 | ,, ,, |

| | s. | d. | |
|---|---|---|---|
| Hopton Wood (Hard Bed) in blocks | 2 | 0 | per ft. cube, deld. rly. depôt. |
| ,, ,, ,, 6 in. sawn both sides landings | 2 | 7 | per ft. super. deld. rly. depôt. |
| ,, ,, ,, 3 in. sawn both sides random slabs | 1 | 0 | ,, ,, |
| ,, ,, ,, 2 in. do. | 0 | 8½ | ,, ,, |

## SLATES.

| In. In. | £ | s. | d. | |
|---|---|---|---|---|
| 20×10 best blue Bangor | 13 | 2 | 6 | per 1000 of 1200 at r. d. |
| 20×12 ,, ,, | 13 | 17 | 6 | ,, ,, |
| 20×10 first quality ,, | 13 | 0 | 0 | ,, ,, |
| 20×12 ,, ,, | 13 | 15 | 0 | ,, ,, |
| 16×8 ,, ,, | 7 | 5 | 0 | ,, ,, |
| 20×10 best blue Portmadoc | 12 | 12 | 6 | ,, ,, |
| 16×8 ,, ,, | 6 | 12 | 6 | ,, ,, |
| 20×10 best Eureka unfading green | 15 | 17 | 6 | ,, ,, |
| 20×12 ,, ,, | 18 | 7 | 6 | ,, ,, |
| 18×10 ,, ,, | 13 | 5 | 0 | ,, ,, |
| 16×8 ,, ,, | 10 | 5 | 0 | ,, ,, |
| 20×10 permanent green | 11 | 12 | 6 | ,, ,, |
| 18×10 ,, ,, | 9 | 12 | 6 | ,, ,, |
| 16×8 ,, ,, | 6 | 12 | 6 | ,, ,, |

## TILES.

| | s. | d. | |
|---|---|---|---|
| Best plain red roofing tiles | 42 | 0 | per 1000 at rly. depôt. |
| Hip and Valley tiles | 3 | 7 | per doz. ,, |
| Best Broseley tiles | 50 | 0 | per 1000 ,, |
| Do. Ornamental tiles | 52 | 6 | ,, ,, |
| Hip and Valley tiles | 4 | 0 | per doz. ,, |
| Best Ruabon red, brown, or brindled do. (Edwards) | 57 | 6 | per 1000 ,, |
| Do. Ornamental do. | 60 | 0 | ,, ,, |
| Hip tiles | 4 | 0 | per doz. ,, |
| Valley tiles | 3 | 0 | ,, ,, |
| Best Red or Mottled Staffordshire do. (Peakes) | 51 | 9 | per 1000 ,, |
| Do. Ornamental do. | 54 | 6 | ,, ,, |
| Hip tiles | 4 | 1 | per doz. ,, |
| Valley tiles | 3 | 8 | ,, ,, |
| Best "Rosemary" brand plain tiles | 48 | 0 | per 1000 ,, |
| Best Ornamental tiles | 50 | 0 | ,, ,, |
| Hip tiles | 4 | 0 | per doz. ,, |
| Valley tiles | 3 | 8 | ,, ,, |
| Best "Hartshill" brand plain tiles, sand-faced | 50 | 0 | per 1000 ,, |
| Do pressed | 47 | 6 | ,, ,, |
| Do. Ornamental do. | 50 | 0 | ,, ,, |
| Hip tiles | 4 | 0 | per doz. ,, |
| Valley tiles | 3 | 6 | ,, ,, |

## WOOD.

| BUILDING WOOD. | At per standard. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in. | 13 | 10 | 0 | 15 | 0 | 0 |
| Deals: best 3 by 9 | 13 | 0 | 0 | 14 | 0 | 0 |
| Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in. | 11 | 0 | 0 | 12 | 0 | 0 |
| Battens: best 2½ by 6 and 3 by 6 | 0 | 10 | 0 | less than 7 in. and 8 in. | | |
| Deals: seconds | 1 | 0 | 0 | less thn best. | | |
| Battens: seconds | 0 | 10 | 0 | ,, ,, | | |
| 2 in. by 4 in. and 2 in. by 6 in. | 9 | 0 | 0 | 10 | 0 | 0 |
| 2 in. by 4½ in. and 2 in. by 5 in. | 8 | 10 | 0 | 9 | 10 | 0 |
| Foreign Sawn Boards— | | | | | | |
| 1 in. and 1¼ in. by 7 in. | 0 | 10 | 0 | more than battens. | | |
| ¾ in. | 1 | 0 | 0 | ,, | | |
| | At per load of 50 ft. | | | | | |
| Fir timber: best middling Danzig or Memel (average specification) | 4 | 10 | 0 | 5 | 0 | 0 |
| Seconds | 4 | 0 | 0 | 4 | 10 | 0 |
| Small timber (8 in. to 10 in.) | 3 | 12 | 6 | 3 | 15 | 0 |
| Small timber (6 in. to 8 in.) | 3 | 0 | 0 | 3 | 10 | 0 |
| Swedish balks | 2 | 10 | 0 | 3 | 0 | 0 |
| Pitch-pine timber (30 ft. average) | 4 | 0 | 0 | 4 | 15 | 0 |

| JOINERS' WOOD. | At per standard. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| White Sea: first yellow deals, 3 in. by 11 in. | 24 | 0 | 0 | 25 | 0 | 0 |
| 3 in. by 9 in. | 22 | 0 | 0 | 23 | 0 | 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 16 | 10 | 0 | 18 | 0 | 0 |
| Second yellow deals, 3 in. by 1 in. | 18 | 10 | 0 | 20 | 0 | 0 |
| ,, ,, 3 in. by 9 in. | 17 | 10 | 0 | 19 | 0 | 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 13 | 10 | 0 | 14 | 10 | 0 |

## WOOD (*continued*).

| JOINERS' WOOD (*continued*)— | At per standard. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| White Sea: Third yellow deals, 3 in. by 11 in. and 9 in. | 13 | 10 | 0 | 15 | 0 | 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 11 | 0 | 0 | 12 | 0 | 0 |
| Petersburg first yellow deals, 3 in. by 11 in. | 21 | 0 | 0 | 22 | 10 | 0 |
| Do. 3 in. by 9 in. | 18 | 0 | 0 | 19 | 10 | 0 |
| Battens | 13 | 10 | 0 | 15 | 0 | 0 |
| Second yellow deals, 3 in. by 11 in. | 16 | 0 | 0 | 17 | 0 | 0 |
| Do. 3 in. by 9 in. | 14 | 10 | 0 | 16 | 0 | 0 |
| Battens | 11 | 0 | 0 | 12 | 10 | 0 |
| Third yellow deals, 3 in. by 11 in. | 13 | 0 | 0 | 14 | 0 | 0 |
| Do. 3 in. by 9 in. | 12 | 10 | 0 | 14 | 0 | 0 |
| Battens | 10 | 0 | 0 | 11 | 0 | 0 |
| White Sea and Petersburg— | | | | | | |
| First white deals, 3 in. by 11 in. | 14 | 10 | 0 | 15 | 10 | 0 |
| ,, ,, 3 in. by 9 in. | 13 | 10 | 0 | 14 | 10 | 0 |
| Battens | 11 | 0 | 0 | 12 | 0 | 0 |
| Second white deals, 3 in. by 11 in. | 13 | 10 | 0 | 14 | 10 | 0 |
| ,, ,, 3 in. by 9 in. | 12 | 10 | 0 | 13 | 10 | 0 |
| ,, ,, battens | 10 | 0 | 0 | 11 | 0 | 0 |
| Pitch-pine: deals | 18 | 0 | 0 | 21 | 0 | 0 |
| Under 2 in. thick extra | 0 | 10 | 0 | 1 | 0 | 0 |
| Yellow Pine—First, regular sizes | 44 | 0 | 0 | upwards. | | |
| Oddments | 32 | 0 | 0 | ,, | | |
| Seconds, regular sizes | 33 | 0 | 0 | ,, | | |
| Yellow Pine oddments | 28 | 0 | 0 | ,, | | |
| Kauri Pine—Planks, per ft. cube | 0 | 3 | 6 | 0 | 5 | 0 |
| Danzig and Stettin Oak Logs— | | | | | | |
| Large, per ft. cube | 0 | 3 | 0 | 0 | 3 | 6 |
| Small ,, ,, | 0 | 2 | 6 | 0 | 2 | 9 |
| Wainscot Oak Logs, per ft. cube | 0 | 5 | 6 | 0 | 6 | 0 |
| Dry Wainscot Oak, per ft. sup. as inch | 0 | 0 | 8½ | 0 | 0 | 9½ |
| ¾ in. do. do | 0 | 0 | 7 | — | | |
| Dry Mahogany—Honduras, Tabasco, per ft. super. as inch | 0 | 0 | 9 | 0 | 1 | 0 |
| Selected, Figury, per ft. super. as inch | 0 | 1 | 6 | 0 | 2 | 6 |
| Dry Walnut, American, per ft. super. as inch | 0 | 0 | 10 | 0 | 1 | 0 |
| Teak, per load | 17 | 0 | 0 | 22 | 0 | 0 |
| American Whitewood Planks, per ft. cube | 0 | 4 | 0 | 0 | 5 | 0 |
| Prepared Flooring, etc.— | Per square. | | | | | |
| 1 in. by 7 in. yellow, planed and shot | 0 | 13 | 6 | 0 | 17 | 6 |
| 1 in. by 7 in. yellow, planed and matched | 0 | 14 | 0 | 0 | 18 | 0 |
| 1¼ in. by 7 in. yellow, planed and matched | 0 | 16 | 0 | 1 | 0 | 0 |
| 1 in. by 7 in. white, planed and shot | 0 | 12 | 0 | 0 | 14 | 6 |
| 1 in. by 7 in. white, planed and matched | 0 | 12 | 6 | 0 | 15 | 0 |
| 1¼ in. by 7 in. white, planed and matched | 0 | 15 | 0 | 0 | 16 | 6 |
| ¾ in. by 7 in. yellow, matched and beaded or V-jointed brds. | 0 | 11 | 0 | 0 | 13 | 6 |
| 1 in. by 7 in. ,, ,, | 0 | 14 | 0 | 0 | 18 | 0 |
| ¾ in. by 7 in. white ,, ,, | 0 | 10 | 0 | 0 | 11 | 6 |
| 1 in. by 7 in. ,, ,, | 0 | 12 | 9 | 0 | 15 | 0 |

6 in. at 6d. to 9d. per square less than 7 in.

## JOISTS, GIRDERS, &c.

| | In London, or delivered Railway Vans, per ton. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Rolled Steel Joists, ordinary sections | 7 | 0 | 0 | 7 | 10 | 0 |
| Compound Girders, ordinary sections | 9 | 0 | 0 | 10 | 0 | 0 |
| Steel Compound Stanchions | 12 | 0 | 0 | 13 | 0 | 0 |
| Angles, Tees, and Channels, ordinary sections | 9 | 0 | 0 | 10 | 0 | 0 |
| Flitch Plates | 9 | 0 | 0 | 10 | 0 | 0 |
| Cast Iron Columns and Stanchions including ordinary patterns | 7 | 10 | 0 | 8 | 10 | 0 |

## METALS.

| | Per ton, in London. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| IRON— | | | | | | |
| Common Bars | 8 | 0 | 0 | 8 | 10 | 0 |
| Staffordshire Crown Bars, good merchant quality | 8 | 10 | 0 | 9 | 0 | 0 |
| Staffordshire "Marked Bars" | 10 | 10 | 0 | — | | |
| Mild Steel Bars | 8 | 15 | 0 | 9 | 0 | 0 |
| Hoop Iron, basis price | 9 | 5 | 0 | 9 | 10 | 0 |
| ,, ,, Galvanised | 17 | 0 | 0 | — | | |
| (*And upwards, according to size and gauge.) | | | | | | |
| Sheet Iron Black— | | | | | | |
| Ordinary sizes to 20 g. | 9 | 10 | 0 | — | | |
| ,, ,, 24 g. | 10 | 10 | 0 | — | | |
| ,, ,, 26 g. | 12 | 0 | 0 | — | | |
| Sheet Iron, Galvanised, flat, ordinary quality— | | | | | | |
| Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g. | 14 | 0 | 0 | — | | |
| Ordinary sizes to 22 g. and 24 g. | 14 | 10 | 0 | — | | |
| ,, ,, 26 g. | 15 | 0 | 0 | — | | |
| Sheet Iron, Galvanised, flat, best quality— | | | | | | |
| Ordinary sizes to 20 g. | 17 | 0 | 0 | — | | |
| ,, ,, 22 g. and 24 g. | 17 | 10 | 0 | — | | |
| ,, ,, 26 g. | 19 | 0 | 0 | — | | |
| Galvanised Corrugated Sheets— | | | | | | |
| Ordinary sizes 6 ft. to 8 ft. 20 g. | 14 | 0 | 0 | — | | |
| ,, ,, 22 g. and 24 g. | 14 | 10 | 0 | — | | |
| ,, ,, 26 g. | 15 | 15 | 0 | — | | |
| Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker | 11 | 10 | 0 | — | | |
| Best Soft Steel Sheets, 22 g. & 24 g. | 12 | 10 | 0 | — | | |
| ,, ,, 26 g. | 14 | 15 | 0 | — | | |
| Cut Nails, 3 in. to 6 in. (Under 3 in., usual trade extras.) | 9 | 10 | 0 | 9 | 15 | 0 |

## LEAD, &c.

| | Per ton, in London. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| LEAD—Sheet, English, 3lb. and up. | 18 | 15 | 0 | — | | |
| Pipe in coils | 19 | 5 | 0 | — | | |
| Soil pipe | 21 | 10 | 0 | — | | |
| Compo pipe | 21 | 10 | 0 | — | | |
| ZINC—Sheet— | | | | | | |
| Vieille Montagne ton | 32 | 0 | 0 | — | | |
| Silesian | 31 | 15 | 0 | — | | |
| COPPER— | | | | | | |
| Strong Sheet per lb. | 0 | 1 | 0 | — | | |
| Thin ,, ,, | 0 | 1 | 1 | — | | |
| Copper nails ,, | 0 | 0 | 11 | — | | |
| BRASS— | | | | | | |
| Strong Sheet ,, | 0 | 0 | 11 | — | | |
| Thin ,, ,, | 0 | 1 | 0 | — | | |

## LEAD, &c. (*continued*).

| | Per ton, in London. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| TIN—English Ingots per lb. | 0 | 1 | 9 | — | | |
| SOLDER—Plumbers' ,, | 0 | 0 | 8½ | — | | |
| Tinmen's ,, | 0 | 0 | 10½ | — | | |
| Blowpipe ,, | 0 | 0 | 11½ | — | | |

## ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

| | | |
|---|---|---|
| 15 oz. thirds | 2½d. | per ft. delivered. |
| ,, fourths | 1¾d. | ,, ,, |
| 21 oz. thirds | 3¼d. | ,, ,, |
| ,, fourths | 2¼d. | ,, ,, |
| 26 oz. thirds | 4¼d. | ,, ,, |
| ,, fourths | 3¼d. | ,, ,, |
| 32 oz. thirds | 5d. | ,, ,, |
| ,, fourths | 4¼d. | ,, ,, |
| Fluted Sheet, 15 oz. | 3¼d. | ,, ,, |
| ,, 21 oz. | 4¼d. | ,, ,, |

## ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

| | | |
|---|---|---|
| ⅛ Hartley's | 2d. | per ft. delivered. |
| ⅛ ,, | 2¼d. | ,, ,, |
| ¼ ,, | 2½d. | ,, ,, |
| Figured and Oxford Rolled "Oceanic" Glass, white | 4d. | ,, ,, |
| Do. ,, tinted | 5¼d. | ,, ,, |

## OILS, &c.

| | | £ | s. | d. |
|---|---|---|---|---|
| Raw Linseed Oil in pipes | per gallon | 0 | 2 | 0 |
| ,, ,, ,, in barrels | ,, | 0 | 2 | 1 |
| ,, ,, ,, in drums | ,, | 0 | 2 | 3 |
| Boiled ,, ,, in pipes | ,, | 0 | 2 | 2 |
| ,, ,, ,, in barrels | ,, | 0 | 2 | 3 |
| ,, ,, ,, in drums | ,, | 0 | 2 | 5 |
| Turpentine in barrels | ,, | 0 | 3 | 11 |
| ,, in drums | ,, | 0 | 4 | 1 |
| Genuine Ground English White Lead | per ton | 22 | 10 | 0 |
| Red Lead, Dry | ,, | 21 | 10 | 0 |
| Best Linseed Oil Putty | per cwt. | 0 | 7 | 0 |
| Stockholm Tar | per barrel | 1 | 12 | 0 |

## VARNISHES, &c.

| | Per gallon. £ | s. | d. |
|---|---|---|---|
| Fine Pale Oak Varnish | 0 | 8 | 0 |
| Pale Copal Oak | 0 | 10 | 6 |
| Superfine Pale Elastic Oak | 0 | 12 | 6 |
| Fine Extra Hard Church Oak | 0 | 10 | 0 |
| Superfine Hard-drying Oak, for seats of Churches | 0 | 14 | 0 |
| Fine Elastic Carriage | 0 | 12 | 6 |
| Superfine Pale Elastic Carriage | 0 | 16 | 0 |
| Fine Pale Maple | 0 | 16 | 0 |
| Finest Pale Durable Copal | 0 | 18 | 0 |
| Extra Pale French Oil | 1 | 1 | 0 |
| Eggshell Flatting Varnish | 0 | 18 | 0 |
| White Copal Enamel | 1 | 4 | 0 |
| Extra Pale Paper | 0 | 12 | 0 |
| Best Japan Gold Size | 0 | 10 | 6 |
| Best Black Japan | 0 | 16 | 0 |
| Oak and Mahogany Stain | 0 | 9 | 0 |
| Brunswick Black | 0 | 8 | 6 |
| Berlin Black | 0 | 16 | 0 |
| Knotting | 0 | 10 | 0 |
| French and Brush Polish | 0 | 10 | 0 |

# PUBLISHER'S NOTICES.

**Nat. Tel., 6112, Gerrard. Telegrams, "The Builder, London."**

**THE INDEX** (with TITLE-PAGE) for VOLUME LXXXIX. (July to December, 1905) was given as a supplement with the issue of January 13th.

**CLOTH CASES** for Binding the Numbers are now ready, price 2s. 6d. each; also

**READING CASES** (Cloth), with Strings, price 9d. each,

**THE EIGHTY-NINTH VOLUME** of "The Builder" (bound), price Twelve Shillings and Sixpence.

**SUBSCRIBERS' VOLUMES**, on being sent to the Office, will be bound at a cost of 3s. 6d. each.

## CHARGES FOR ADVERTISEMENTS.

**COMPETITIONS, CONTRACTS, ALL NOTICES ISSUED BY CORPORATE BODIES, COUNTY AND OTHER COUNCILS, PROSPECTUSES OF PUBLIC COMPANIES, SALES BY TENDER, LEGAL ANNOUNCEMENTS**, etc., etc.

Six lines or under ..... 6s. 0d.
Each additional line ..... 1s. 0d.

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Each additional line (about ten words) ..... 0s. 6d.

**PREPAYMENT IS ABSOLUTELY NECESSARY.**

*** Stamps *must not* be sent, but all sums should be remitted by Postal Orders, payable to J. MORGAN, and addressed to the Publisher of "THE BUILDER," Catherine Street, W.C.

Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the Outside Wrapper should be in by TWELVE NOON on WEDNESDAY.

**ALTERATIONS IN STANDING ADVERTISEMENTS** or **ORDERS TO DISCONTINUE** same must reach the Office before TEN o'clock on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, etc., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

**ADVERTISERS** in "THE BUILDER" may have *Replies addressed to the Office*, Catherine Street, Covent Garden, W.C., *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage. Unused stamps are returned to advertisers the week after publication.

N.B.—The Reply Boxes are not intended for trade lists, circulars, and the like; should these be received, they cannot (if noticed) be forwarded.

**AN EDITION** Printed on **THIN PAPER**, for **FOREIGN** and **COLONIAL CIRCULATION**, is issued every week.

**READING CASES** { NINEPENCE EACH. By post (carefully packed) 1s.

## TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance. The Editor cannot undertake to read and consider articles offered for acceptance unless they are type-written.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor.

## TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l*., unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BLACKHEATH.—For erection of dwelling-house in Oakcroft-road, for Mr. A. B. Bacon. Mr. E. W. Leeson, architect, 49, Princes-street, Manchester:—

Kennard Bros.* ..... £1,250

BOURNEMOUTH.—For making up roads, Winton (Firs Glen-road), and Boscombe (rear of parade), for the Corporation. Mr. F. W. Lacey, Borough Engineer and Surveyor, Municipal Offices, Bournemouth:—

J. Corbin, Orpington, Stourvale-road, Pokesdown, Bournemouth* ..... £239 1 7

BRIGHTON.—For erecting new nursing cottages at the Reedean School, near Brighton. Messrs. J. W. Simpson & M. Ayrton, architects, 3, Verulam-buildings, Gray's Inn, W.C.:—

| | | | |
|---|---|---|---|
| Field & Co. ..... | £3,378 | Rowland Bros. .... | £2,739 |
| T. A. Hawkins & Co., London* ..... | ‡2,900 | Cooper & Sons .... | 2,678 |
| Cubitt & Co..... | 2,815 | Lynn & Sons ..... | 2,614 |
| Patching & Son .. | 2,808 | Sittin & Evershed | 2,598 |
| Barnes & Sons .... | 2,793 | Norman & Burt .. | 2,590 |
| | | Potter Bros. ..... | 2,520 |

‡ Revised by telegram to £2,760.

BROMLEY.—For house, Durham-avenue, Bromley, Kent, for Mr. G. S. Cooper. Messrs. S. and W. Stocker, architects, 90 and 91, Queen-street, Cheapside, E.C. Quantities by Mr. W. James Pamphilon, 21, Finsbury-pavement, E.C.:—

| | | | |
|---|---|---|---|
| Pearce Bros. ..... | £2,140 | R. A. Lowe ..... | £1,889 |
| C. King ..... | 2,040 | T. Crossley & Son.. | 1,883 |
| F. G. Minter ..... | 2,007 | L. Evans ..... | 1,795 |
| W. G. Larke & Sons | 1,980 | W. Hockaday .... | 1,790 |
| F. C. Arnaud & Son | 1,975 | S. W. Harris & Co. | 1,747 |
| T. Graty ..... | 1,932 | J. Watt ..... | 1,475 |
| F. P. Duthoit..... | 1,895 | | |

BURNHAM (Somerset).—For the erection of new shops and saleroom, Alfred-street, for Messrs. J. H. Palmer & Sons. Mr. C. Hiscock, architect, Burnham:—

| | | | |
|---|---|---|---|
| H. R. Clapp ..... | £650 | Gleed Bros. ..... | £510 |
| F. L. Roberts ..... | 616 | W. Lynham ..... | 500 |

CAMELFORD:—For the extension of school buildings, for the Governors of Camelford Secondary Schools. Mr. W. J. Jenkins, architect, Bodmin:—

Messrs. Lobb & Worth, Camelford* ..... £871

COVENTRY.—For erection of new foundry buildings, Foleshill, for Messrs. Webster & Bennett, machine tool makers. Messrs. Tait & Herbert, architects, Leicester and Coventry:—

*Steelwork:* Needham & Lowe, Leicester* £2,050
*Builders' Work:* Exors. of C. Garlick, Coventry* ..... 800

DARVEL.—For sewerage and sewage purification, works, for the Town Council of the Burgh of Darvel, Ayrshire. Mr. P. Campbell Hart, C.E., 134, St. Vincent-street, Glasgow:—

| | | | |
|---|---|---|---|
| Bell & Barr .. | £4,488 6 7 | W. Lawson, Contractor. Kilmarnock* | £4,070 0 0 |
| I. Crack .... | 4,462 19 6 | | |
| C. Clarkson & Co..... | 4,413 7 6 | | |

DOVERCOURT.—For erecting two blocks of semi-detached residences, Stour View Estate. Mr. H. S. Watling, F.S.A., architect, Kingsway House, Dovercourt and Ipswich:—

| | | | |
|---|---|---|---|
| T. Parkington & Sons | £1,900 | E. Saunders ..... | £1,290 |
| W. H. Blomfield .. | 1,780 | Downs & Sage, Harwich and Dovercourt* ..... | 1,220 |
| H. J. Linzell ..... | 1,678 | | |
| Skerritt, Sons, & Co. | 1,391 | | |

EXETER.—For construction of permanent way and paving, etc., for five-eighths of a mile, for the Corporation. Mr. T. Moulding, City Engineer and Surveyor, Municipal Offices, Southernhay West, Exeter:—

E. Ireland, Morecambe ..... £5,323

EXETER.—For constructing two additional bays at the car depôt, Heavitree, for the Corporation. Mr. T. Moulding, City Engineer and Surveyor, Municipal Offices, Southernhay West, Exeter:—

Westcott, Austin, & White, Exeter .... £1,473

GORLESTON.—For erecting a free library, for Great Yarmouth Town Council. Mr. J. W. Cockrill, Borough Surveyor, Town Hall, Great Yarmouth:—

| | | | |
|---|---|---|---|
| J. E. Pestell ..... | £2,600 | J. D. Harman .... | £2,440 |
| C. C. J. Cafley .... | 2,565 | L. G. Haddingham | 2,436 |
| Moore & Son..... | 2,540 | A. Gunns ..... | 2,427 |
| G. T. Flaxman .... | 2,490 | G. W. Beech ..... | 2,345 |
| Carter & Wright .. | 2,473 | B. G. Beech, Yarmouth‡ ..... | 2,335 |
| J. Eastoe ..... | 2,447 | | |

‡ Accepted subject to revision.

GRIMSBY.—For construction of attics, Corporation Electricity Works. Mr. H. Gilbert Whyatt, A.M.I.C.E., Borough Engineer:—

| | | | |
|---|---|---|---|
| D. Seamer .... | £237 15 0 | W. Gilbert .... | £191 7 6 |
| Hewins & Goodhead ..... | 229 0 0 | Emerson Bros. | 184 10 6 |
| H. Hodson .... | 203 17 0 | J. A. Thomas, 127, Heneage-street* ..... | 181 0 9 |
| J. Hogg ..... | 195 15 0 | | |

HANDSWORTH.—For making Selborne-road, for the Urban District Council. Mr. H. Richardson, Surveyor, Handsworth:—

| | | | |
|---|---|---|---|
| S. Wood ..... | £570 0 | A. Cooper, Birmingham* .... | £497 0 |
| Currall, Lewis, & Martin, Ltd. .. | 528 16 | | |

KINGSTON-UPON-THAMES.—For erecting new school buildings for boys and girls in the Richmond-road. Mr. F. W. Roper, architect, 9, Adam-street, Adelphi, W.C.:—

| | | | |
|---|---|---|---|
| Webb & Grimsdale | £14,999 | Parsons & Townsend ..... | 10,857 |
| J. Long & Son.... | 13,497 | H. Lindfield & Son | 10,773 |
| W. H. Hyde..... | 12,368 | Wisdom Bros. .... | 10,770 |
| J. W. Brooking .. | 11,756 | W. Johnson & Co., Ltd. ..... | 10,734 |
| Patman & Fotheringham, Ltd. .. | 11,675 | F. & G. Foster.... | 10,695 |
| W. J. Renshaw .. | 11,500 | J. Appleby & Sons | 10,666 |
| Mattocks & Parsons | 11,499 | J. M. Patrick .... | 10,654 |
| Rowe & Co., Ltd. . | 11,478 | M. Wells & Co., Ltd. ..... | 10,635 |
| E. Streather..... | 11,367 | Higgs & Outhwaite | 10,627 |
| J. Burges & Sons.. | 11,350 | F. Hawkey ..... | 10,570 |
| A. Faulks..... | 11,269 | J. Garrett & Son.. | 10,500 |
| Cropley Bros., Ltd. | 11,197 | S. Page & Son .... | 10,449 |
| W. Smith & Sons.. | 11,125 | T. J. Hawkins & Co. ..... | 10,375 |
| J. & C. Bowyer .. | 11,088 | G. E. Wallis & Sons, Ltd. .... | 10,260 |
| J. Shelbourne & Co. | 11,077 | F. G. Lawrence, Opposite Railway Station, Kingston-upon-Thames* ..... | 10,237 |
| J. Cassé ..... | 11,054 | | |
| Myall & Upson .. | 11,050 | | |
| Sabey & Son, Ltd. | 10,993 | | |
| D. W. Barker .... | 10,957 | | |
| W. J. Dickens .... | 10,890 | | |
| J. Barker & Co., Ltd. ..... | 10,887 | | |

LEYTON.—For erection of car sheds, for Leyton Urban District Council:—

| | |
|---|---|
| W. Manders, Leyton* ..... | £12,178 0 0 |
| Dorman, Long, & Co., Ltd., of Middlesbrough (for the supply of iron and steel work in roof trusses, etc.)* ..... | 2,732 16 3 |

LINCOLN.—For erecting a new pavilion in connexion with the Infectious Diseases Hospital, Longhey-road, for the Corporation. Mr. R. A. MacBrair, M.I.C.E., City Surveyor, Silver-street, Lincoln:—

| | | | |
|---|---|---|---|
| W. Halkes .... | £2,390 0 | C. Taylor ..... | £2,195 0 |
| W. Wright & Son | 2,292 0 | Lansdown & Son | 2,159 10 |
| F. Scarborough | 2,198 18 | H. S. & W. Close* | 2,119 0 |

[All of Lincoln.]

LONDON.—For the supply of Fletton bricks, for the Bermondsey Borough Council:—

| |
|---|
| Wakeley Bros. & Co., 74, Bankside* .. £1 4 6‡ |

‡ per 1,000.

LONDON.—For heating apparatus, Fulham Palace-road, for the London County Council:—

| | | | |
|---|---|---|---|
| F. W. Brock .. | £475 12 7 | J. Yetton & Co. | £263 15 0 |
| G. Davis ..... | 325 0 0 | G. & E. Bradley | 259 0 0 |
| Stevens & Sons | 290 0 0 | J. Richmond & Co., Ltd. .... | 255 0 0 |
| Brightside Foundry and Engineering Co., Ltd. ..... | 285 0 0 | A. Macintosh & Sons, Ltd. .. | 243 5 0 |
| R. H. & J. Pearson, Ltd. .... | 270 0 0 | Palowkar & Sons, 90 & 91, Queen-street, Cheapside* .. | 239 0 0 |

[The estimate of the architect (Education) comparable with these tenders is £280.]

LONDON.—For heating apparatus, Galleywall-road, Bermondsey, for the London County Council:—

| | | | |
|---|---|---|---|
| C. Kite & Co... | £135 0 0 | Bolton, Fane, & Co..... | £90 0 0 |
| J. Defries & Sons, Ltd. .. | 103 10 0 | J. Yetton & Co. | 86 10 0 |
| G. & E. Bradley | 103 0 0 | F. W. Brock .. | 85 15 11 |
| Wippell Bros. & Row ..... | 97 10 0 | Stevens & Sons, 239, Southwark Bridge-road*..... | 85 0 0 |
| Palowkar & Sons..... | 94 8 0 | | |

[The estimate of the architect (Education) comparable with these tenders is £72.]

LONDON.—For cleaning and painting work at the North-Western Fever Hospital, Lawn-road, N.W., for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief:—

| | | | |
|---|---|---|---|
| J. F. Penn .. | £2,894 18 10 | J. Walker & Son ..... | £1,656 0 0 |
| F. Bush .... | 2,595 0 0 | W. J. Sims & Sons ..... | 1,638 1 4 |
| J. J. Richards | 2,374 14 3 | W. Mills .... | 1,599 0 0 |
| C. Hale & Co. | 2,172 0 0 | Greenhill & Markham.. | 1,587 11 0 |
| Barrett & Power .... | 2,100 0 0 | L. Kazak .. | 1,546 0 0 |
| W. Johnson & Co., Ltd. | 1,995 0 0 | W. Hussey .. | 1,480 17 0 |
| A. Hertier & Co. ..... | 1,930 5 7 | A. H. Inns .. | 1,370 0 0 |
| E. Proctor & Son ..... | 1,910 0 0 | A. Porter.... | 1,334 0 0 |
| W. Reason .. | 1,749 0 0 | M. McCarthy | 1,310 0 0 |
| Sabey & Son, Ltd. ..... | 1,735 0 0 | J. Arundel (Exors. of), 38, City-road, Bradford* .... | 1,038 11 4 |
| R. Woollaston & Co. .... | 1,708 10 5 | | |

LONDON.—For erecting sub-fire-station, Plumstead, for the London County Council:—

| | | | |
|---|---|---|---|
| C. Wall, Ltd. ..... | £8,990 | Kerridge & Shaw .. | £8,189 |
| E. Lawrance & Sons | 8,676 | Leslie & Co., Ltd... | 8,150 |
| F. G. Minter ..... | 8,564 | Holloway Bros. (London), Ltd. .. | 7,930 |
| Kirk & Randall .... | 8,338 | F. & H. F. Higgs, Station Works, Loughborough Junction, S.E.* .. | 7,894 |
| Spencer, Santo, & Co., Ltd..... | 8,328 | | |
| H. Lovatt, Ltd..... | 8,237 | | |
| H. L. Holloway .... | 8,200 | | |

LONGBENTON.—For 390 lineal yds. of pipe sewer, etc., Eastfield-road, for Tynemouth Rural District Council. Mr. A. S. Dinning, Surveyor, 21, Ellison-place, Newcastle-on-Tyne:—

| |
|---|
| E. Edgar, Whitley Bay ..... £142 1 0 |

LONG GROVE.—For installation of electric lighting and power, Long Grove Asylum, for the London County Council:—

| | |
|---|---|
| E. D. Triswell ..... | £25,117 0 0 |
| W. Mackie & Co. ..... | 19,127 0 0 |
| W. Dibbed ..... | 17,027 1 0 |
| G. Hartland, Bowden, & Co. .... | 16,814 0 0 |
| J. O. Grant & Taylor..... | 16,586 0 0 |
| Edmundson's Electricity Corporation, Ltd. ..... | 16,550 0 0‡ |
| Tyler & Freeman ..... | 16,542 0 0 |
| F. A. Glover & Co., Ltd. ..... | 16,500 0 0 |
| W. H. Arundell ..... | 16,300 0 0 |
| W. G. Heath & Co..... | 16,000 0 0 |
| Strode & Co. ..... | 15,973 0 0 |
| T. Hiscock ..... | 15,935 13 6 |
| Bailey, Grundy, & Barrett ..... | 15,750 10 0 |
| Strange & Son, Ltd. ..... | 15,654 0 0 |
| G. N. Haden & Son..... | 15,427 0 0 |
| Hooper, Neary, & Co..... | 14,976 0 0 |
| Dargue, Griffiths, & Co..... | 14,448 0 0 |
| S. S. Cosens ..... | 14,217 0 0 |
| J. E. Spagnoletti & Co. ..... | 14,000 0 0 |
| H. A. Jackson & Co. ..... | 13,995 0 0 |
| Tamplin & Makovski ..... | 13,883 0 0 |
| Buchanan & Curwen ..... | 13,880 0 0 |
| Sweet Bros. ..... | 13,655 9 7 |
| T. Potter & Sons, Ltd. ..... | 12,995 0 0 |
| Army & Navy Auxiliary Stores .. | 12,880 0 0 |
| W. Fryer & Co. ..... | 12,769 0 0 |
| W. J. Furse ..... | 12,700 0 0 |
| W. Winn ..... | 12,675 0 0 |
| Cox Walkers..... | 12,582 0 0 |
| Bevan & Sons, Ltd..... | 12,495 0 0 |
| R. Cort & Sons, Ltd. ..... | 12,336 0 0 |
| Jackson Bros. ..... | 12,235 0 0 |
| Bromley, Batstone, & Kirk ..... | 11,600 0 0 |
| Lea & Warren, London and Kettering* ..... | 11,200 0 0 |

‡ New alternative tender.

LONG GROVE.—For locks, Long Grove Asylum, for the London County Council:—

| | |
|---|---|
| Chubb & Sons, Ltd..... | £3,075 0 0 |
| J. Gibbons, Wolverhampton* .... | 1,993 13 4 |
| Hobbs, Hart, & Co. ..... | 1,868 12 6 |
| C. G. Smith & Co. ..... | 1,546 12 6 |

MERTHYR.—For additions to the "Dorothy," for Mr. A. I. Evans. Mr. T. E. Rees, architect, Gernaut, The Walk, Merthyr Tydfil:—

| | | | |
|---|---|---|---|
| R. Lloyd ..... | £252 10 0 | Hall Bros. .... | £152 17 9 |
| G. Hallet ..... | 250 0 0 | W. F. Clarke, Cardiff, Merthyr* .... | 143 0 0 |
| J. Jenkins .... | 239 0 0 | | |
| W. Skinner .... | 218 0 0 | | |
| T. Davies & Co. | 176 10 0 | | |

MOLD.—For alterations to Bethesda C.M. Chapel. Messrs. R. Davies & Son, architects, Bangor:—

| | | | |
|---|---|---|---|
| R. Williams ..... | £769 | J. Mayers & Son .... | £536 |
| R. Peters ..... | 584 | T. Foulkes..... | 496 |
| M. S. Rogers..... | 563 | T. Roberts, Mold* .. | 499 |

NEWARK.—For erecting a pair of residences and shop, Barnbygate. Messrs. Saunders & Saunders, architects and engineers, Imperial-chambers, Newark:—

| | | | |
|---|---|---|---|
| W. Smith ..... | £580 | G. Henderson ..... | £506 |
| C. Baines ..... | 545 | H. Hirst..... | 497 |
| G. Brown & Son .... | 529 | F. W. Crossland* .. | 496 |
| G. E. Dobney ..... | 520 | | |

[All of Newark.]

NEWARK.—For renewals, repairs, and alterations to properties belonging to the St. Leonard's property. Messrs. Sheppard & Lockton, architects and surveyors, Bargate, Newark:—

| | | | |
|---|---|---|---|
| F. W. Crossland ..... | £1,587 14 5 | G. Brown & Son | £1,295 0 0 |
| H. Hurst .... | 1,580 0 0 | C. Baines .... | 1,220 0 0 |
| T. H. Harper | 1,325 0 0 | W. Smith, Newark* .. | 1,130 0 0 |
| C. Williamson | 1,325 0 0 | | |

NEWHAVEN.—For erecting new Council offices and fire-station in Fort-road, for the Urban District Council. Mr. F. J. Rayner, architect, 34, Meeching-road, Newhaven:—

| | | | |
|---|---|---|---|
| Potter Bros..... | £2,056 0 | T. Rich..... | £1,800 0 |
| Rowland Bros. | 1,849 0 | M. Woolger .... | 1,798 0 |
| H. Lindfield & Sons ..... | 1,848 0 | C. Cooke, Brighton-road, Newhaven* .. | 1,757 16 |
| R. Cook & Sons | 1,800 0 | | |

NORMANS RIDING.—For enlargement of galvanised iron isolation hospital, for Blaydon, Ryton, and Whickham Joint Hospital Committee. Mr. J. B. Renton, Architect, Council Offices, Whickham, R.S.O. Quantities by Architect:—

| | | | |
|---|---|---|---|
| Bruce & Still.... | £3,714 0 | Humphreys, Ltd. | £2,732 0 |
| Spiers & Co. .... | 3,450 0 | Bolton & Paul .. | 2,697 0 |
| Ginger, Lee, & Co. | 3,417 0 | W. Harbrow .... | 2,665 0 |
| Darlington Construction Co., Ltd. | 3,195 0 | F. Smith & Co., Ltd. | 2,593 0 |
| W. Bain & Co... | 3,160 0 | Alnwick Foundry and Engineering Co., Ltd, Alnwick* | 2,425 0 |
| J. McManus .... | 3,115 0 | | |
| T. J. Hawkins & Co. | 2,849 5 | | |

NORMANS RIDING.—For foundations, plumbing, drainage, etc., in connexion with the enlargement of the galvanised Isolation Hospital, for Blaydon, Ryton, and Whickham Joint Hospital Committee. Mr. J. B. Renton, Architect, Council Offices, Whickham, R.S.O. Quantities by Architect:—

| | | | |
|---|---|---|---|
| S. Easton, Ltd. | £2,157 0 0 | F. W. Jefferson | £1,900 0 0 |
| J. Jackson & Sons ..... | 2,020 0 0 | W. G. Armstrong .... | 1,898 3 8 |
| I. Bewley .... | 1,995 0 0 | J. Archibald, Gateshead*.. | 1,648 0 0 |
| E. R. Davison | 1,977 0 0 | | |
| A. Tench .... | 1,973 12 5 | | |

PENZANCE.—For building a villa, for Mr. R. T. Harvey. Mr. H. Maddern, architect, 13, Clarence-street, Penzance:—

| | | | |
|---|---|---|---|
| R. Walters | £190 14 | J. E. Hocken, Drift, R.S.O.* | £170 0 |
| C. M. Richards | 190 0 | | |
| J. Bodinar | 185 0 | | |
| F. Harvey | £348 10 | C. Tregenza, Mousehole, Penzance* | £284 18 |
| R. McLary | 319 0 | | |
| J. Weeks | 296 0 | | |

PUDSEY.—For additions to Priestley Mills, for Mr. Samuel Cordingley. Mr. W. R. Nunns, architect and engineer, Market-street, Bingley:—

| | |
|---|---|
| *Masons:* J. Thornton & Son, Thackley | £440 12 6 |
| *Joiners:* Wilkinson & Sanderson, Pudsey | 180 0 0 |
| *Slater:* W. Thornton, Bingley | 65 0 0 |
| *Plasterer:* W. Shaw, Pudsey | 28 14 0 |
| *Plumber:* J. Searth, Pudsey | 39 5 6 |

SHILDON (Durham).—For road-works, for Shildon and East Thickley Urban District Council. Mr. M. Turnbull, Surveyor, Shildon:—

*All Saints'-road.*

W. Burdon, Shildon* ..... £122 0 5

*Bouch-street.*

J. Moore* ..... 111 15 0

*Back Redworth-road (Scott-street to South-street).*

J. Moore* ..... 22 16 0

SOUTHALL.—For the new secondary schools, for the Middlesex County Council, providing for 250 mixed scholars, together with two laboratories, balance-room, dining hall, assembly hall, artroom, lecture-room, library, principals' and common-rooms, and cloak and changing-rooms. A separate block comprises the cookery and manual training centres and caretaker's quarters. The enclosure of the playing fields, 4 acres in extent, is included in the contract. Mr. H. G. Crothall, Architect to the Education Committee:—

| | | Amount allowed in Tender for M.T. and Cookery Centres and Caretaker's Apartments. |
|---|---|---|
| J. Stewart | £13,429 | £2,378 0 0 |
| F. G. Minter | 12,369 | 2,056 0 0 |
| W. J. Dickens | 12,070 | 1,997 0 0 |
| Ward & Son | 12,027 | 2,155 0 0 |
| W. Lawrence & Son | 11,844 | 1,990 0 0 |
| Mattock & Parsons | 11,834 | 2,000 0 0 |
| Fassnidge & Son | 11,823 | 2,041 0 0 |
| Treasure & Son | 11,806 | 2,041 12 3 |
| W. Brown | 11,786 | 2,026 0 0 |
| Fairhead & Son | 11,658 | 1,984 0 0 |
| Wisdom Bros. | 11,625 | 1,954 0 0 |
| W. J. Renshaw | 11,599 | 1,949 0 0 |
| A. & B. Hanson | 11,598 | 1,995 0 0 |
| H. Knight & Son | 11,484 | 1,990 0 0 |
| D. D. Heath | 11,420 | 1,994 0 0 |
| J. Dorey & Co.* | 11,125 | 1,905 0 0 |

* Recommended for acceptance.

STANLEY.—For forming private streets at South Moor, for the Urban District Council. Mr. J. Routledge, Surveyor, Council Offices, Stanley:—

| | | | |
|---|---|---|---|
| P. Duffy | £1,093 10 9 | Johnson & Strong | £909 9 6 |
| G. E. Simpson | 1,006 12 6 | | |
| T. Johnson | 995 0 0 | R. C. Birtley, Stanley* | 867 3 4 |
| J. McLaren | 915 5 1 | | |

STAPLETON.—For erecting a stone bridge over the Flosh Burn, at The Flosh, near Greenhill, for the Longtown Rural District Council. Mr. J. Murray, Surveyor, Kirklinton:—

Messrs. J. Scott & Sons, Newcastleton, N.B.* £178 7 9

SWINDON.—For the erection of dwelling-houses and shops, fronting Commercial-road and Curtis-street, Swindon, for Mr. L. L. Morse, M.P., The Croft, Swindon. Messrs. Read & Osborne, architects, Regent Circus, Swindon:—

| | | | |
|---|---|---|---|
| Tydeman Bros. | £3,975 0 0 | R. Chanter | £2,900 0 0 |
| R. J. Leighfield | 3,050 0 0 | G. J. Norman* | 2,785 4 6 |
| A. J. Colborne | 2,919 10 0 | | |

[All of Swindon.]

TUPSLEY.—For the erection of a pair of semi-detached villas on the Highfield estate, for Mr. A. Preece. Messrs. Groome & Bettington, architects and surveyors, Palace-chambers, King-street, Hereford:—

| | | | |
|---|---|---|---|
| E. J. Davies | £925 0 | W. Powell | £836 0 |
| R. L. Friend | 907 10 | C. Cooke | 830 0 |
| Davies & Co. | 876 0 | J. T. Jones* | 770 0 |

[All of Hereford.]

TEDDINGTON.—For new elementary school to accommodate 800 children, with cookery and manual training centres, committee-room, and caretaker's house, for the Middlesex County Council. Mr. H. G. Crothall, Architect to the Education Committee:—

| | | Amount in Tender for Cookery and M.T. Centres. |
|---|---|---|
| C. F. Kearley | £12,996 0 0 | £1,812 0 0 |
| Mattock & Parsons | 12,975 0 0 | 1,700 0 0 |
| J. Ward & Son | 12,519 5 6 | 1,800 0 0 |
| Messum & Sons | 12,475 0 0 | 1,792 0 0 |
| Patman & Fotheringham | 12,423 0 0 | 1,720 0 0 |
| W. Blackburn | 12,250 0 0 | 1,700 0 0 |
| Fassnidge & Son | 12,124 0 0 | 1,808 0 0 |
| D. D. Heath | 12,104 0 0 | 1,890 0 0 |
| Treasure & Son | 12,086 0 0 | 1,776 17 7 |
| A. & B. Hanson | 11,993 0 0 | 1,770 0 0 |
| F. G. Minter | 11,990 0 0 | 1,743 0 0 |
| W. J. Renshaw | 11,893 0 0 | 1,650 0 0 |
| W. Lawrence & Sons | 11,874 0 0 | 1,674 0 0 |
| A. Fairhead & Son | 11,823 0 0 | 1,698 0 0 |
| J. Barker & Co. | 11,759 0 0 | — |
| Wisdom Bros. | 11,642 9 0 | 1,623 15 0 |
| J. Dorey & Co., Ltd. | 11,606 0 0 | 1,690 0 0 |
| Gough & Co. | 11,539 0 0 | 1,709 0 0 |
| Knight, Henry, & Son* | 10,987 0 0 | 1,574 0 0 |

WALMER.—For the erection of cottages and stabling, for Mr. W. R Davies. Messrs. Fry & Miller, architects, 22, Cannon-street, Dover. Quantities by architects:—

| | | | |
|---|---|---|---|
| A. W. Thompson | £1,539 12 0 | W. Bromley | £1,482 8 0 |
| J. E. Turner | 1,537 12 11 | T. T. Denne | 1,439 0 0 |
| J. W. Sandcraft | 1,531 0 0 | S. & R. Jefford, Walmer* | 1,337 0 0 |
| R. & G. Brisley | 1,505 0 0 | | |

WALMER.—For the erection of bungalow on Walmer beach, for Mr. J. Martin. Messrs. Fry & Miller, architects, 22, Cannon-street, Dover.—

J. E. Turner ..... £690

WALTHAMSTOW.—For erecting Edinburgh-road Council School, for the Education Committee. Mr. H. Prosser, Architect, Education Offices, High-street, Walthamstow. Quantities by Mr. G. T. G. Wright, 3, Great Winchester-street, E.C.:—

| | | | |
|---|---|---|---|
| H. Lovatt, Ltd. | £7,384 | R. & E. Evans | £6,589 |
| Rowe & Co. | 7,258 | W. Lawrence & Son | 6,583 |
| J. McKay | 7,069 | J. Chessum & Sons | 6,580 |
| Sands & Burley | 6,900 | G. E. Wallis & Sons | 6,574 |
| Patman & Fotheringham | 6,793 | Appleby & Sons | 6,570 |
| F. & A. Willmott | 6,776 | A. G. Crisp | 6,530 |
| Kilby & Gayford | 6,729 | Hammond & Son | 6,487 |
| W. J. Maddison | 6,669 | J. & J. Dean | 6,412 |
| F. J. Coxhead | 6,619 | H. Knight & Son | 6,397 |
| Pollard & Brand | 6,600 | Rowley Bros. | 6,334 |


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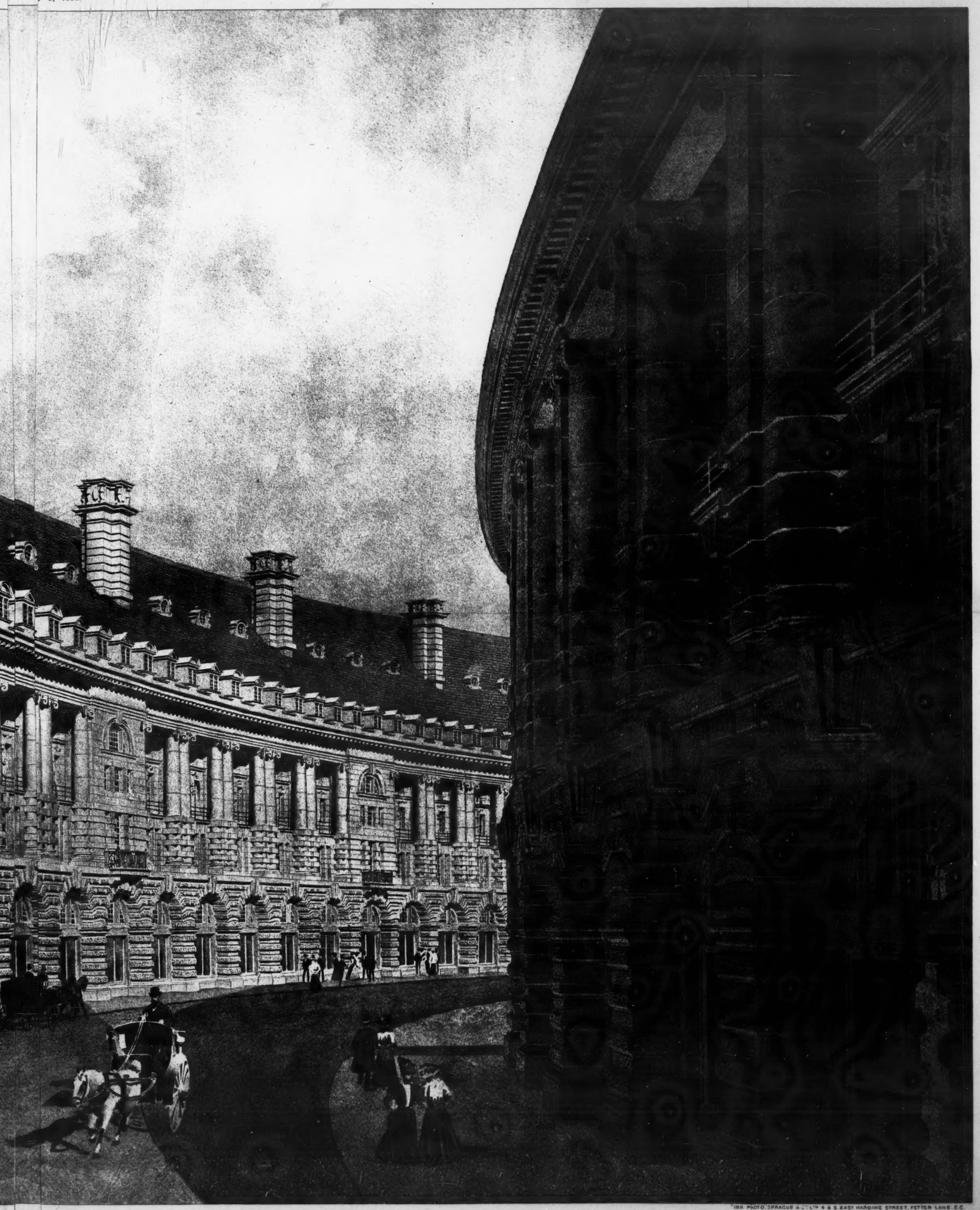

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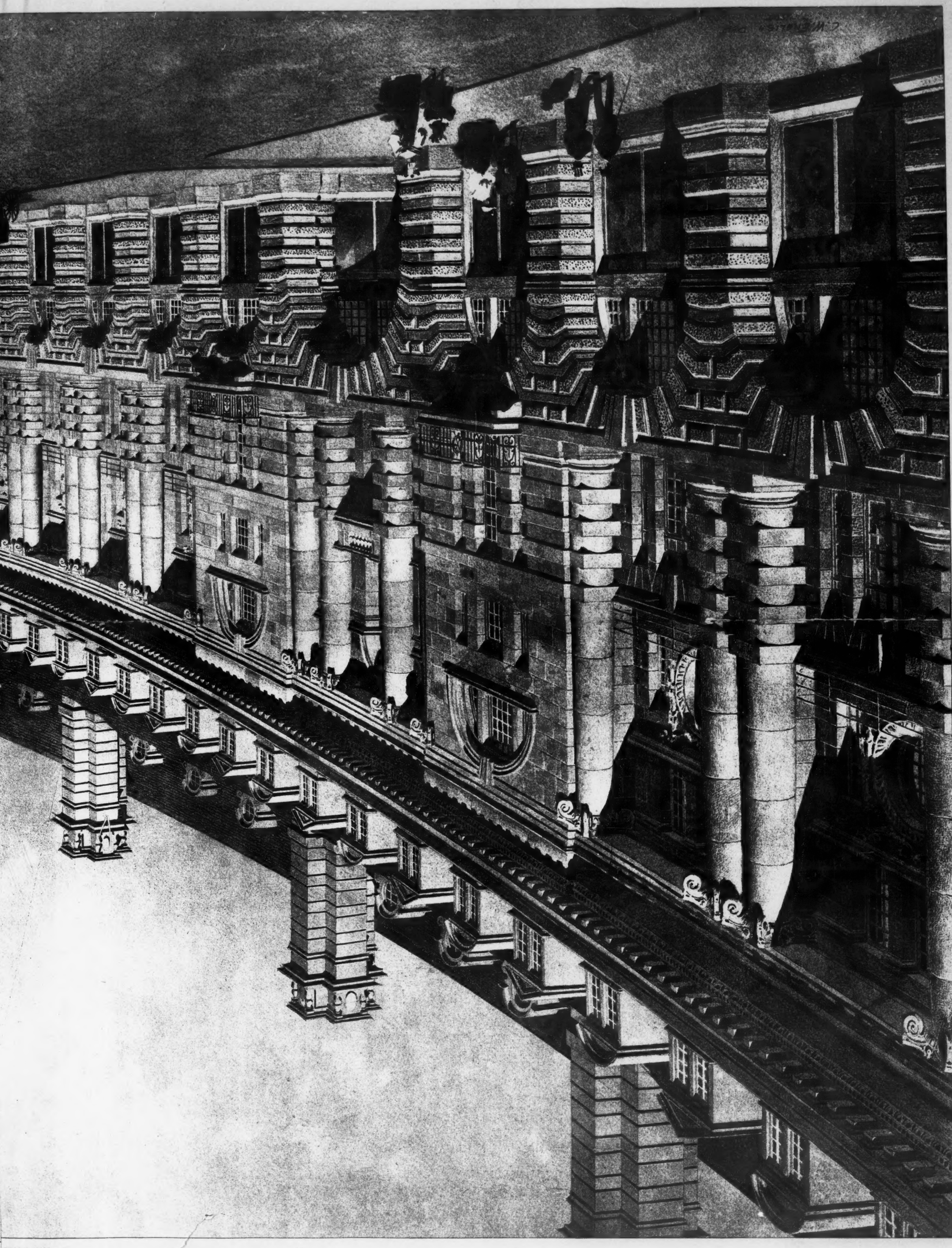

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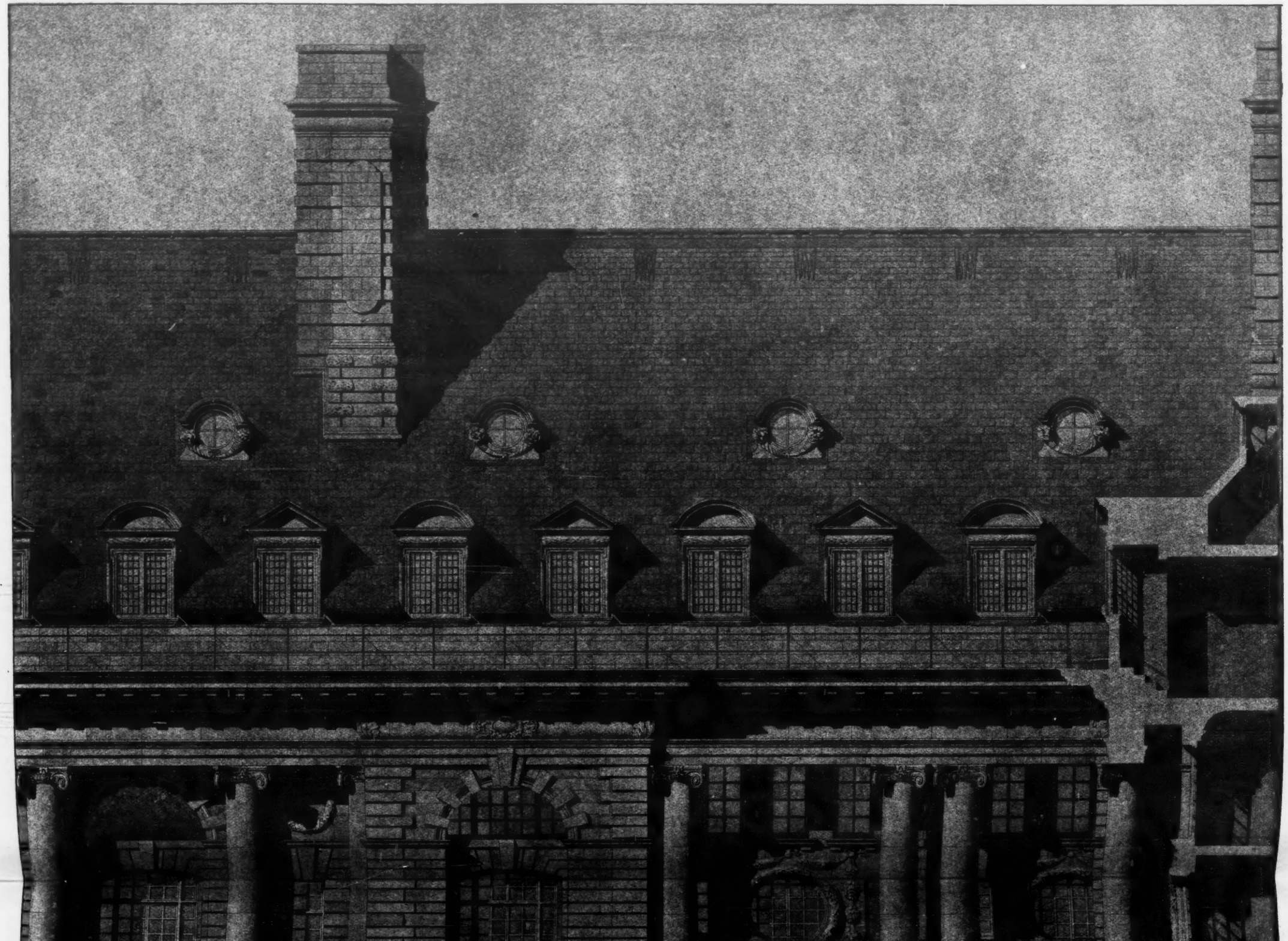

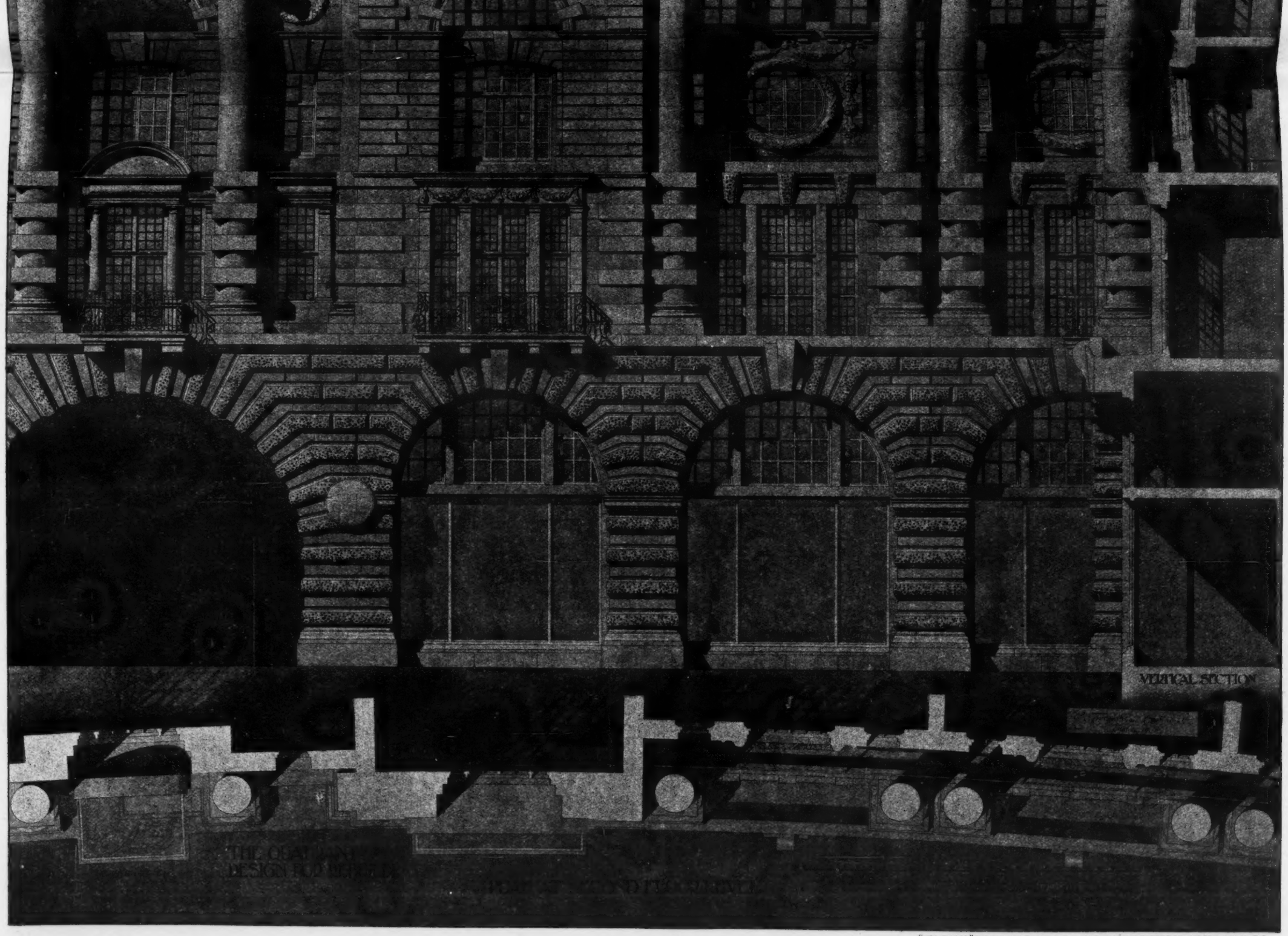


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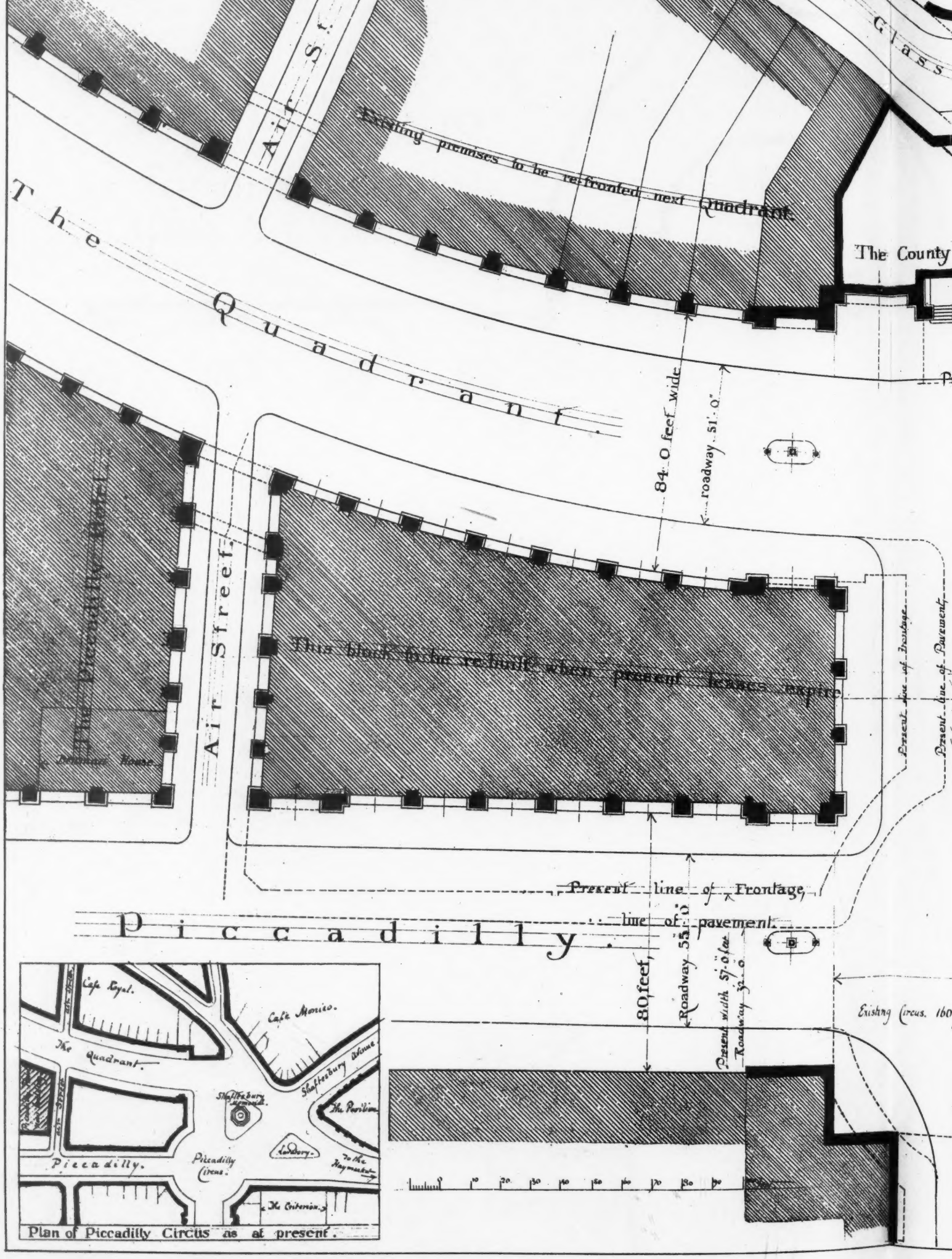


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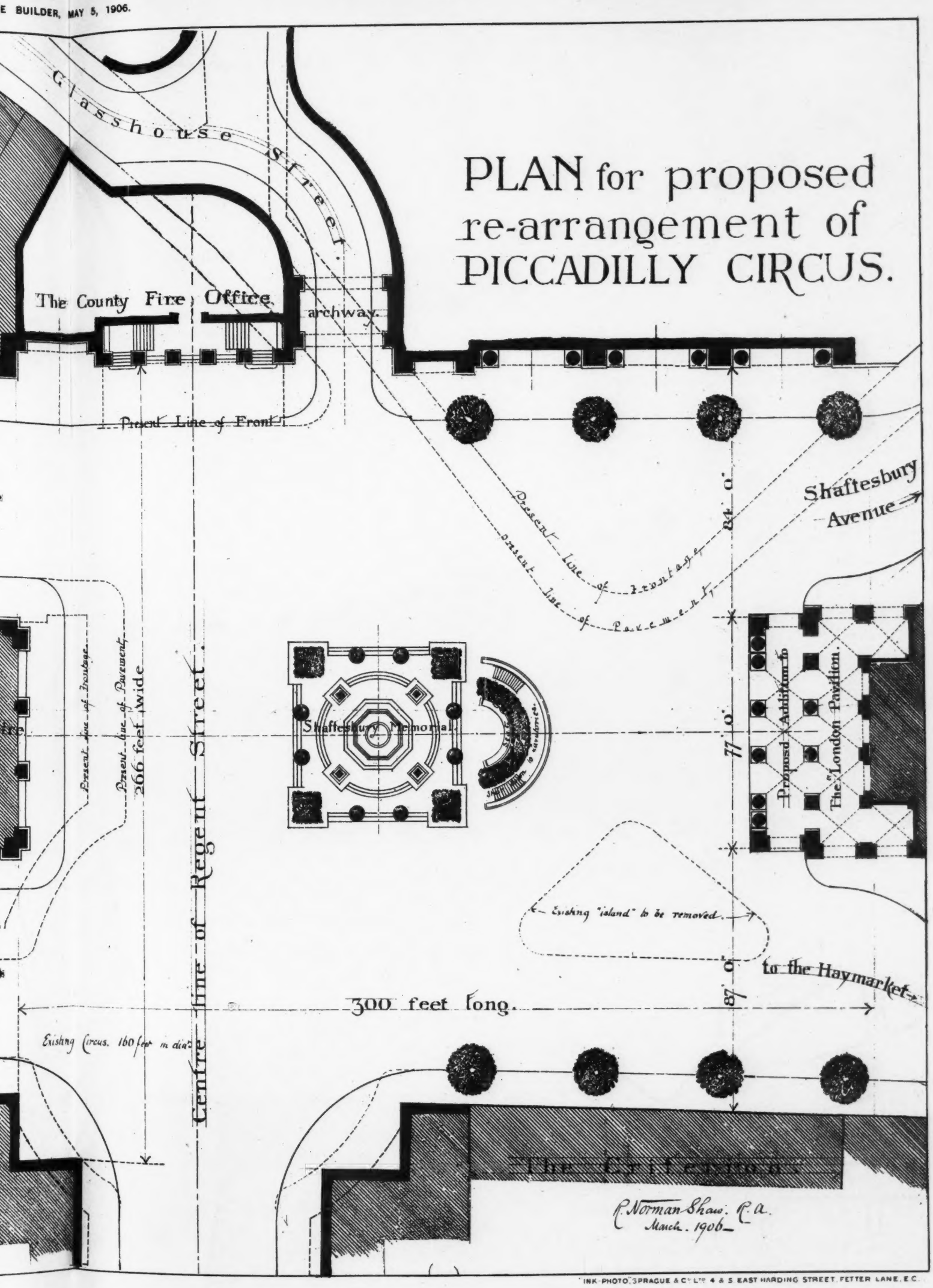


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